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Regulations and Non-Regulatory Revisions to State Implementation Plan: New Jersey

Atlantic Environmental Associates, Inc.
Waltham, MA

Prepared for

Environmental Protection Agency
Research Triangle Park, NC

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Regulations and Non-Regulatory Revisions to State Implementation Plan: New Jersey

By

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Contract No. 68-02-3565

EPA Project Officer: Willis P. Beal

Prepared for

U.S ENVIRONMENTAL PROTECTION AGENCY
Control Programs Development Division
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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PREFACE

This document has been produced in compliance with Section 110(h) of the Clean Air Act, as amended in 1977, which mandates periodic publication of State Implementation Plan (SIP) requirements. The first section of the document comprises the Federally approved SIP regulations. It consists of the EPA approved State and/or local air pollution control regulations cited by reference in the Federal Register; all regulations Federally promulgated as of August 1, 1981 have been included.

The present compilation constitutes an update of a previous documentation of regulations as of July 1, 1979.* State and/or local air quality regulations which have not been Federally approved as of August 1, 1981 are not included. However, any omissions of regulations from this document in no way affects the ability of the respective Federal, State or local agencies to enforce such regulations.

This document is not intended to provide a tool for determining the enforceability of any given regulation. Rather, it is intended to provide a comprehensive compilation of those regulations which are incorporated by reference into Title 40, Part 52, of the Code of Federal Regulations (CFR). The exclusion of a Federally approved regulation from this document does not diminish the enforceability of the regulation. Similarly, the inclusion of a given regulation in this document does not, in itself, render the regulation enforceable by either the State or EPA.

The regulations have been organized in this document according to the official State/local agency format. However, since State air quality regulations vary widely in their organization, content, and language, a standardized subject index has been added. The index listings consist of both pollutant and activity oriented categories to facilitate usage. For example, regulations which apply to copper smelters may be found under sulfur compounds (50.2), particulate matter process weight (50.1.1), or copper smelters (51.15). Federal regulations pertaining to a given State are not included herein but can be found under Title 40 Code of Federal Regulations, Part 52.

Additionally, a summary sheet of the regulatory revisions is included to provide a quick historical assessment of the changes. These summary sheets contain the date of submittal to EPA of each revision and the Federal Register publication date on which the revision was approved by EPA. A brief description of the regulation which was submitted is also included.

In accordance with the Act, the second part of the document contains non-regulatory SIP revisions approved by EPA up to August 1, 1981. All approved non-regulatory revisions listed under Identification of Plan in the CFR are included except notices or certifications of public hearings, and technical support data. Non-regulatory submittals which have only received EPA approval on selected elements are included in their entirety with an accompanying indication of the status of Federal actions on the non-approved elements. The non-regulatory revisions have been organized in this document according to the date of publication of EPA approval in the Federal Register. For historical completeness, a complete tabulation of these revisions is provided at the beginning of this second section.

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* Regulations and Non-Regulatory Revisions to State Implementation Plan: New Jersey, EPA-450/2-80-037, prepared under Contract 68-02-3388, July 31, 1980.

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16. ABSTRACT

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The second part of the document contains the text of non-regulatory SIP revisions approved by EPA up to August 1, 1981, excluding notices or certifications of public hearings and technical support data. A complete tabulation of these revisions is also provided.

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SUMMARY OF
EPA-APPROVED REGULATORY REVISIONS TO STATE OF NEW JERSEY SIP
BETWEEN JULY 1, 1979 AND JULY 31, 1981

Publication of Approval	Submittal Date	Page	Document Description
03/11/80	06/20/79	45FR15540	Proposed versions of State's new source review regulation, and regulation for control of volatile organic substances (VOS).
03/11/80	10/19/79	45FR15540	State's adopted regulation for control of VOS N.J.A.C. 7:27-16.1 et seq., and "Report of Public Hearing and Basis for Promulgation."
05/07/80	03/05/80	45FR30070	Air Test Method 3 to be used in determining compliance with the provisions of N.J.A.C. 7:27-16.1 et seq., "Control and Prohibition of Air Pollution by Volatile Organic Substances."
05/07/80	04/10/80	45FR30070	Completed Air Test Method 3.
04/15/81	08/05/80	46FR21996	Revision to Subchapter 18 of N.J.A.C., "Control and Prohibition of Air Pollution from Ambient Air Quality in Nonattainment Areas" (Emission Offset Rule), N.J.A.C. 7:27-18.1 et seq.

TABLE OF CONTENTS

STATE REGULATIONS

Revised Standard Subject Index	Section Number	Title	Page
	Chapter 27		
(2.0)	Subchapter 1	General Provisions	1
(1.0)	7:27 - 1.4	Definitions	1
(51.13)	Subchapter 2	Control and Prohibition of Open Burning	3
(1.0)	7:27 - 2.1	Definitions	3
(51.13)	7:27 - 2.2	Open Burning for Salvage Operations	4
(51.13)	7:27 - 2.3	Open Burning of Refuse	4
(2.0)	7:27 - 2.4	Exceptions	4
(2.0)	7:27 - 2.5	Infested Plant Life	5
(51.13)	7:27 - 2.6	Prescribed Burning	6
(8.0)	7:27 - 2.7	Emergencies	6
(11.0)	7:27 - 2.8	Hazardous Material	7
(2.0)	7:27 - 2.9	Herbaceous Plant Life	8
(51.1)	7:27 - 2.10	Orchard Prunings	9
(2.0)	7:27 - 2.11	Fees	10
(50.1.2)(51.5)	Subchapter 3	Control and Prohibition of Smoke From Combustion of Fuel	12
(1.0)	7:27 - 3.1	Definitions	12
(50.1.2)	7:27 - 3.2	Smoke Emissions From Stationary Indirect Heat Exchangers	13
(50.1.2)	7:27 - 3.3	Smoke Emissions From Marine Installations	13
(50.1.2)(12.0)	7:27 - 3.4	Smoke Emissions From The Combustion of Fuel in Mobile Sources	14
(50.1.2)	7:27 - 3.5	Smoke Emissions From Stationary Internal Combustion Engines and Stationary Turbine Engines	14
(9.0)	7:27 - 3.6	Stack Test	14
(2.0)	7:27 - 3.7	Exceptions	14
(51.5)	Subchapter 4	Control and Prohibition of Solid Particles From Combustion of Fuel	15
(1.0)	7:27 - 4.1	Definitions	15

TABLE OF CONTENTS (Cont.)

Revised Standard Subject Index	Section Number	Title	Page
(50.1)	7:27 - 4.2	Standards For the Emission of Particles	16
(9.0)	7:27 - 4.3	Performance Test Principle	17
(9.0)	7:27 - 4.4	Emission Tests	17
(3.0)	7:27 - 4.5	Permit to Construct, Install, or Alter and Certificate to Operate	17
(2.0)	7:27 - 4.6	Exceptions	18
(2.0)	Subchapter 5	Prohibition of Air Pollution	19
(1.0)	7:27 - 5.1	Definitions	19
(2.0)	7:27 - 5.2	Prohibition of Air Pollution	19
(50.1.1)	Subchapter 6	Control and Prohibition of Particles From Manufacturing Processes	20
(1.0)	7:27 - 6.1	Definitions	20
(50.1)	7:27 - 6.2	Standards for the Emission of Particles	23
(9.0)	7:27 - 6.3	Performance Test Principle	24
(9.0)	7:27 - 6.4	Emission Tests	25
(5.0)	7:27 - 6.5	Variances	25
(3.0)	7:27 - 6.6	Permit to Construct and Certificate to Operate	25
(2.0)	7:27 - 6.7	Exceptions	26
(50.2)	Subchapter 7	Sulfur	27
(1.0)	7:27 - 7.1	Definitions	27
(50.2)	7:27 - 7.2	Control and Prohibition of Air Pollution From Sulfur Compounds	28
(3.0)	Subchapter 8	Permits and Certificates	37
(1.0)	7:27 - 8.1	Definitions	37
(3.0)	7:27 - 8.2	Permits and Certificates Required	38
(2.0)	7:27 - 8.3	General Provisions	40
(3.0)	7:27 - 8.4	Applications for Permits and Certificates	41
(2.0)	7:27 - 8.5	Service Fees	42
(51.6)	Subchapter 9	Sulfur in Fuels	44
(1.0)	7:27 - 9.1	Definitions	44

TABLE OF CONTENTS (Cont.)

Revised Standard Subject Index	Section Number	Title	Page
(50.2)	7:27 - 9.2	Sulfur Content Standards	45
(2.0)	7:27 - 9.3	Exemptions	46
(51.6)	Subchapter 10	Sulfur in Coal	47
(1.0)	7:27 - 10.1	Definitions	47
(50.2)	7:27 - 10.2	Sulfur Content Standards	48
(51.6)	7:27 - 10.3	Expansion, Reconstruction, or Construction of Coal Fired Fuel Burning Facilities	50
(2.0)	7:27 - 10.4	Exemptions	51
(51.9)	Subchapter 11	Incinerators	52
(1.0)	7:27 - 11.1	Definitions	52
(2.0)	7:27 - 11.2	Construction Standards	54
(50.0)	7:27 - 11.3	Emission Standards	54
(3.0)	7:27 - 11.4	Permit to Construct and Certificate to Operate	56
(2.0)	7:27 - 11.5	Operation	57
(2.0)	7:27 - 11.6	Exceptions	57
(8.0)	Subchapter 12	Prevention and Control of Air Pollution Emergencies	58
(1.0)	7:27 - 12.1	Definitions	58
(8.0)	7:27 - 12.2	Emergency Criteria	58
(8.0)	7:27 - 12.3	Criterion for Emergency Termination	59
(2.0)	7:27 - 12.4	Standby Plans	59
(2.0)	7:27 - 12.5	Standby Orders	64
(4.0)	Subchaper 13	Ambient Air Quality Standards	67
(1.0)	7:27 - 13.1	Definitions	67
(4.0)	7:27 - 13.2	General Ambient Air Quality Standard	68
(4.1)	7:27 - 13.3	Ambient Air Quality Standards for Suspended Particulate Matter	68
(4.2)	7:27 - 13.4	Ambient Air Quality Standards for Sulfur Dioxide	69
(4.5)	7:27 - 13.5	Ambient Air Quality Standards for Carbon Monoxide	69

TABLE OF CONTENTS (Cont.)

Revised Standard Subject Index	Section Number	Title	Page
(4.6)	7:27 - 13.6	Ambient Air Quality Standard For Photochemical Oxidants	70
(4.4)	7:27 - 13.7	Ambient Air Quality Standard For Hydrocarbons	70
(4.3)	&:27 - 13.8	Ambient Air Quality Standard For Nitrogen Dioxide	70
(12.0)(50.1.2)	Subchapter 14	Control and Prohibitions of Smoke From Diesel-Powered Motor Vehicles	71
(1.0)	7:27 - 14.1	Definitions	71
(12.0)	7:27 - 14.2	Public Highway Standard	72
(9.0)	7:27 - 14.3	Inspection Standard	72
(12.0)	Subchapter 15	Control and Prohibition of Air Pollution From Light-Duty Gasoline-Fueled Motor Vehicles	75
(1.0)	7:27 - 15.1	Definitions	75
(12.0)	7:27 - 15.2	Public Highway Standard	76
(12.0)	7:27 - 15.3	New Motor Vehicle Dealer Inspection Compliance Standards	76
(9.0)	7:27 - 15.4	Motor Vehicle Inspection Standard	76
(2.0)	7:27 - 15.5	Exceptions	77
(50.4)	Subchapter 16	Control and Prohibition of Air Pollution By Volatile Organic Substances	79
(1.0)	7:27 - 16.1	Definitions	79
(51.16)	7:27 - 16.2	Storage of Volatile Organic Substances	84
(51.16)	7:27 - 16.3	Transfer Operations	87
	7:27 - 16.4	Open Top Tanks and Surface Cleaners	89
	7:27 - 16.5	Surface Coating Operations	94
	7:27 - 16.6	Source Operations Other Than Storage Tanks, Transfers, Open Top Tanks, Surface Cleaners, and Surface Coaters	97
(9.0)	7:27 - 16.7	Cutback and Emulsified Asphalts	102
	7:27 - 16.8	Emission Information and Tests	102
(5.0)	7:27 - 16.9	Variances	102
(3.0)	7:27 - 16.10	Permit to Construct and Certificate to Operate	103

TABLE OF CONTENTS (Cont.)

Revised Standard Subject Index	Section Number	Title	Page
(2.0)	7:27 - 16.11	Applicability	103
(2.0)	7:27 - 16.12	Exceptions	104
(19.0)	Subchapter 18	Control and Prohibition of Air Pollution From New or Altered Sources Affecting Ambient Air Quality in Nonattainment Areas (Emission Offset Rule)	105
(1.0)	7:27 - 18.1	Definitions	105
(2.0)	7:27 - 18.2	Provisions	108
(9.0)	7:27 - 18.3	Air Quality Impact Review	110
(19.0)	7:27 - 18.4	Emission Offset Demonstration	111
(19.0)	7:27 - 18.5	Emission Offset Postponement	112
(19.0)	7:27 - 18.6	Emission Offset Exemption	112
(19.0)	7:27 - 18.7	Banking of Emissions	113
(19.0)	7:27 - 18.8	Secondary Emissions	113
(5.0)	7:27 - 18.9	Exemption for Alternative Fuel	113
(15.0)	7:27 - 18.10	Applicability	114
	Chapter 27B		
(9.0)(50.4)	Subchapter 3	Sampling and Analytical Procedures For The Determination of Volatile Organic Substances From Source Operations	115
	7:27B - 3.1	Definitions	115
	7:27B - 3.2	Acceptable Test Methods	118
	7:27B - 3.3	Operating Conditions During the Test	119
	7:27B - 3.4	Sampling Facilities To Be Provided By The Person Responsible for Emissions	119
	7:27B - 3.5	Source Operations and Applicable Test Methods	120
	7:27B - 3.6	Procedures For The Determination of Vapor Pressures of Volatile Organic Substances	122
	7:27B - 3.7	Procedures For The Direct Measurement of Volatile Organic Substances Using Flame Ionization Detector (FID)	125
	7:27B - 3.8	Procedures For The Direct Measurement of Volatile Organic Substances Using a Gas Chromatograph (GC) With A Flame Ionization Detector (FID)	133

TABLE OF CONTENTS (Cont.)

Revised Standard Subject Index	Section Number	Title	Page
	7:27B - 3.9	Procedures For The Sampling And Remote Analysis of Known Volatile Organic Substances Using a Gas Chromatograph (GC) with a Flame Ionization Detector (FID)	137
	7:27B - 3.10	Procedures For The Demonstration of Volatile Organic Substances in Surface Coating Formulations	143
	7:27B - 3.11	Procedures For The Determination of Volatile Organic Substances Emitted From Transfer Operations	145
	7:27B - 3.12	Procedures For The Determination of Volatile Organic Substances in Cutback and Emulsified Asphalt	150

NEW JERSEY AIR POLLUTION CONTROL CODE

Subchapter 1 - General Provisions

7:27-1.4 - DEFINITIONS

The following terms used in this code shall mean and include:

REFUSE: Garbage, rubbish and trade waste.

GARBAGE: Animal and vegetable matter originating in houses, kitchens, restaurants and hotels, produce markets, etc.

RUBBISH: Solids not considered to be highly flammable or explosive including but not limited to rags, old clothes, leather, rubber, carpets, wood, excelsior, paper, ashes, tree branches, yard trimmings, furniture, tin cans, glass, crockery, masonry and other similar materials.

TRADE WASTE: All solid or liquid material or rubbish resulting from construction, building operations, or the prosecution of any business, trade or industry including, but not limited to, plastic products, cartons, paint, grease, oil and other petroleum products, chemicals, cinders, and other forms of solid or liquid waste material.

SALVAGE OPERATIONS: Any business, trade or industry engaged in whole or in part in salvaging or reclaiming any product or material, including, but not limited to, metals, chemicals, shipping containers or drums.

OPEN BURNING: Any fire wherein the products of combustion are emitted into the open air, and are not directed thereto through a stack or chimney.

STACK OR CHIMNEY: A flue, conduit or opening permitting particulate or gaseous emissions into the open air, or constructed or arranged for such purpose.

PERSON: The word "person" includes corporations, companies, associations, societies, firms, partnerships and joint companies as well as individuals, unless restricted by the context to an individual as distinguished from a corporate entity or specifically restricted to one or some of the above enumerated synonyms and, when used to designate the owner of property which may be the subject of an offense includes this State, the United States, any other state of the United States as defined infra and any foreign country or government lawfully owning or possessing property within this State.

COMMISSIONER: Means the State Commissioner of Health who is the chief administrative officer of the State Department of Health.

AIR POLLUTION: The presence in the outdoor atmosphere of substances in quantities which are injurious to human, plant or animal life or to property or unreasonably interfere with the comfortable enjoyment of life and property throughout the State and in such territories of the State as shall be affected thereby and excludes all aspects of employer-employee relationship as to health and safety hazards.

Subchapter 2 - Control and Prohibition of Open Burning

7:27-2.1 DEFINITIONS

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

"Air contaminant" means solid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Department" means the Department of Environmental Protection.

"Garbage" means waste animal or vegetable matter from houses, kitchens, restaurants, hotels, produce markets or any other source, or food of any kind to be thrown away.

"Hazardous material" means trade waste which presents an existing or potential hazard to health or safety if disposed of by any means other than open burning including, but not limited to, explosives, nitrocellulose and elemental sodium.

"Herbaceous Plant Life" means plant life relating to or having the characteristics of an herb, that is, a seed producing annual, biennial or perennial that does not develop persistent woody tissue but dies down at the end of a single growing season.

"Incinerator" means any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including but not limited to refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

"Infested plant life" means plant life contaminated by or harboring an insect, a plant pathogen, a weed, or any other organism capable of causing damage, economic or otherwise, to environmental or natural resources.

"Open burning" means any fire whose products of combustion are emitted directly into the open air, and are not directed thereto through the stack or chimney of an incinerator.

"Plant life" means vegetation including, but not limited to, trees, tree branches, leaves, yard trimmings, shrubbery, grass, weeds, and crops.

"Prescribed burning" means the open burning of plant life under such conditions that the fire is confined to a pre-determined area and accomplishes the environmentally beneficial objectives of prevention and control of wildfires.

"Prunings" means dead or excess branches and twigs removed from plants to improve crop yield.

"Refuse" means rubbish, garbage, trade waste and plant life.

"Rubbish" means waste solids not considered to be highly flammable or explosive including, but not limited to rags, old clothes, leather, rubber, carpets, wood, excelsior, paper, ashes, furniture, tin cans, glass, crockery, masonry and other similar materials.

"Salvage operation" means any operation or activity from which is salvaged or reclaimed any product or material including, but not limited to, metals, chemicals, or shipping containers.

"Stack or chimney" means a flue, conduit, or opening designed and constructed for the purpose of emitting air contaminants into the outdoor air.

"Trade waste" means all waste solid or liquid material or rubbish resulting from construction, building operations, or the prosecution of any business, trade or industry including, but not limited to, plastic products, cartons, paint, grease, oil and other petroleum products, chemicals, cinders and other forms of solid or liquid waste material.

7:27-2.2 OPEN BURNING FOR SALVAGE OPERATIONS

No person shall cause, suffer, allow or permit a salvage operation by open burning.

7:27-2.3 OPEN BURNING OF REFUSE

(a) No person shall cause, suffer, allow or permit the disposal of rubbish, garbage or trade waste or buildings or structures by open burning.

(b) No person shall cause, suffer, allow or permit the disposal of fallen leaves by open burning.

(c) No person shall cause, suffer, allow or permit the disposal of any type of plant life by open burning.

7:27-2.4 EXCEPTIONS

The provisions of Section 2.3 shall not apply to open burning of refuse for training or research exercises in fire protection or prevention when conducted at a permanent facility or training center designed to be used solely for such purposes on a continuing basis.

7:27-2.5 INFESTED PLANT LIFE

(a) The Department may issue a permit for open burning of infested plant life, except in any municipality which prohibits such open burning, to a person responsible for the control of infested plant life upon certification by an authorized County Agricultural Agent that no other effective method of controlling the infestation can be used without causing damage, economic or otherwise, to environmental or natural resources.

(b) Applications may be made to the Bureau of Forestry, Forest Fire Service, in the Department for a permit for the open burning of infested plant life.

(c) Such permit may be valid for a single event or for a period not to exceed fourteen days, may be conditioned upon any requirements which the Department deems to be necessary and is revocable at the discretion of the Department.

(d) No open burning shall commence until a permit is issued and is current. Any person seeking a permit for the open burning of infested plant life shall file with the Department an affidavit, signed by both the applicant and the County Agricultural Agent, which sets forth the following and any other information requested by the Department:

1. The name, address, and telephone number of the person submitting the affidavit; if such person is a legal entity, the name, title, and address of the individual authorized to accept service or process on its behalf and the name of the officer in charge of the premises where infested plant life is to be burned.

2. The type of business or activity involved.

3. Municipal restrictions on open burning of plant life.

4. The proposed operating practice including the type and quantity of infested plant life to be burned.

5. Whether the open burning is to be carried on in a single instance or the frequency if intermittent.

6. The exact location at which the infested plant life will be burned.

7. Reasons why the infestation cannot be controlled by any method other than by open burning without causing damage, economic or otherwise, to environmental or natural resources.

7:27-2.6 PRESCRIBED BURNING

(a) The Department may issue a permit authorizing prescribed burning in accordance with a plan approved by and under the control and supervision of the Bureau of Foresty, Forest Fire Service.

(b) The permit may be conditioned upon any requirements which the Bureau of Forestry, Forest Fire Service, deems to be necessary and is revocable at the discretion of the Department.

(c) The permit may be issued for a single event or for a period of days, and no prescribed burning shall commence until a permit is issued and current.

(d) Any person seeking a permit for prescribed burning shall file with the Bureau of Forestry, Forest Fire Service, an affidavit which sets forth the following and any other information requested by the Bureau of Forestry, Forest Fire Service:

1. The name, address, and telephone number of the person submitting the affidavit; if such person is a legal entity, the name, title, and address of the individual authorized to accept service of process on its behalf and the name of the officer in charge of the premises where the prescribed burning is to take place.

2. The name and address of the owner of the premises where the prescribed burning is to take place.

3. The exact location at which the prescribed burning is to take place.

4. A detailed plan describing the specific reasons why the prescribed burning is necessary and how it is to be done.

7:27-2.7 EMERGENCIES

(a) The Department may issue a permit to a municipality for the open burning of plant life upon a finding of merit in an affidavit filed with the Department by the municipal clerk that excessive quantities of plant wastes have been produced by an emergency such as a wind storm or ice storm.

(b) The permit may be conditioned upon any requirements which the Department deems to be necessary and is revocable at the discretion of the Department.

(c) The permit may be issued for a single event or for a period not to exceed seven days, and no open burning of plant life shall commence until a permit is issued and current.

(d) The affidavit shall set forth the following and any other information requested by the Department:

1. The name, address and telephone number of the municipal clerk submitting the affidavit.

2. The name of the authorized municipal representative in charge of the premises where the plant life is to be burned.

3. The proposed operating practice including the type and quantity of plant life to be burned.

4. Whether the open burning is to be carried on in a single instance or the frequency if intermittent.

5. The exact location(s) at which the plant life is to be burned.

6. Reasons why the plant life cannot be disposed of by any method other than by open burning.

7:27-2.8 HAZARDOUS MATERIAL

(a) The Department may issue a permit for the open burning of hazardous material, except in any municipality which prohibits such open burning, where no other known method of disposal can be used without hazard to health or property, upon a finding of merit in an affidavit filed with the Department by the person seeking to engage in such activity.

(b) The permit may be conditioned upon any requirements which the Department deems to be necessary and is revocable at the discretion of the Department.

(c) The permit may be issued for a single event, or for a period not to exceed six months, and no disposal of hazardous materials by open burning shall commence until a permit is issued and is current.

(d) The affidavit shall set forth the following and any other information requested by the Department:

1. The name, address, and telephone number of the person submitting the affidavit; if such person is a legal entity, and name title, and address of the individual authorized to accept service of process on its behalf and the name of the officer in charge of the premises where the hazardous material is to be burned.

2. The type of business or activity involved.

3. Municipal restrictions on open burning of hazardous material.

4. The proposed operating practice including the type and quantity of hazardous material to be disposed of by open burning.

5. Whether the open burning is to be carried on in a single instance or the frequency if intermittent.

6. The exact location at which the hazardous material will be disposed of by open burning.

7. Reasons why the hazardous material cannot be disposed of by any method other than by open burning without resulting in a hazard to health or property.

7:27-2.9 HERBACEOUS PLANT LIFE

(a) The Department may issue a permit for the open burning of herbaceous plant life on the premises where grown, except in any municipality which prohibits such burning, when the premises are actively in use for raising food crops or salt hay for commercial purposes and on a commercial scale and where no other effective method of disposal can be used without causing damage, economic or otherwise, to environmental or natural resources.

(b) The permit will be issued only in accordance with a plan approved by and under the control and supervision of the Bureau of Forestry, Forest Fire Service.

(c) The permit will be conditioned upon the confirmation of favorable meteorological conditions on the day the open burning will be conducted.

(d) The permit may also be conditioned upon any requirements which the Deparment deems to be necessary and is revocable at the discretion of the Department.

(e) The permit may be issued for a single event, or for a period not exceeding fourteen days, and no open burning shall commence until a permit is issued and current.

(f) Any person seeking a permit for the open burning of herbaceous plant life shall file with the Bureau of Forestry, Forest Fire Service, an affidavit which sets forth the following and any other information requested by the Department.

1. The name, address, and telephone number of the person submitting the affidavit; if such person is a legal entity, the name, title, and address of the individual authorized to accept service of process on its behalf and the name of the officer in charge of the premises where the open burning is to take place.

2. The name and address of the owner of the premises where the open burning is to take place.

3. Municipal restrictions on open burning.

4. The exact location of the premises on which the herbaceous plant life will be burned.

5. The nature of the business or activity involved and the use being made of the premises.

6. A detailed plan describing the nature and quantity of herbaceous plant life and how the open burning is to be done, including whether it is to take place in a single instance or the frequency of intermittent.

7. Reasons why no other effective method of disposal can be used without causing damage, economic or otherwise, to environmental or natural resources.

7:27-2.10 ORCHARD PRUNINGS

(a) The Department may issue a permit for the open burning of orchard prunings on the premises where grown, until June 30, 1977, and except in any municipality which prohibits such burning, when such prunings are derived from trees being cultivated for commerical purposes to produce food crops or as ornamentals and where no other effective method of disposal can be used without causing damage, economic or otherwise, to environmental or natural resources.

(b) The permit will be issued only in accordance with a plan approved by and under the control and supervision of the Bureau of Forestry, Forest Fire Service.

(c) The permit will be conditioned upon the confirmation of favorable meteorological conditions on the day the open burning will be conducted.

(d) The permit may also be conditioned upon any requirements which the Department deems to be necessary and is revocable at the discretion of the Department.

(e) The permit may be issued for a single event or for a period not exceeding fourteen days, and no open burning shall commence until a permit is issued and current.

(f) Any person seeking a permit for the open burning of orchard prunings shall file with the Bureau of Forestry, Forest Fire Service, an affidavit which sets forth the following and any other information requested by the Department.

1. The name, address, and telephone number of the person submitting the affidavit; if such person is a legal entity, the name, title, and address of the individual authorized to accept service of process on its behalf and the name of the officer in charge of the premises where the open burning is to take place.

2. The name and address of the owner of the premises where the open burning is to take place.

3. Municipal restrictions on open burning.

4. The exact location of the premises on which the orchard prunings will be burned.

5. The nature of the business or activity involved and the use being made of the premises.

6. A detailed plan describing the nature and quantity of orchard prunings and how the open burning is to be done, including whether it is to take place in a single instance, or the frequency if intermittent.

7. Reasons why no other effective method of disposal can be used without causing damage, economic or otherwise, to environmental or natural resources.

7:27-2.11 FEES

(a) Any application for a permit for the open burning of herbaceous plant life as provided in Section 2.9 shall be accompanied by a service fee of $10.00 and no such permit will be issued until the service fee is received.

(b) Any application for a permit for the open burning of orchard prunings as provided in Section 2.10 shall be accompanied by a service fee of $10.00 and no such permit will be issued until the service fee is received.

(c) Service fees shall be submitted in the form of a certified check or postal money order payable to the order of the New Jersey Bureau of Air Pollution Control.

Subchapter 3 - CONTROL AND PROHIBITION OF SMOKE FROM COMBUSTION OF FUEL*

7:27-3.1 - DEFINITIONS

SMOKE: Small gasborne and airborne particles, exclusive of water vapor, arising from a process of combustion in sufficient number to be observable.

FUEL: Solid, liquid or gaseous materials used to produce useful heat by burning.

INDIRECT HEAT EXCHANGER: Equipment in which heat from the combustion of fuel is transferred by conduction through a heat-conducting material to a substance being heated, so that the latter is not contacted by, and adds nothing to, the products of combustion.

VISIBLE SMOKE: Smoke which obscures light to a degree readily discernible by visual observation.

STACK OR CHIMNEY: A flue, conduit or opening designed and constructed for the purpose of emitting air contaminants into the outdoor air.

INTERNAL CROSS-SECTIONAL DIMENSION: Any maximum linear perpendicual distance from an inside wall of a stack or chimney to the inside of an opposite wall, such as the diameter of a circular cross-section or the length or width of a rectangular cross-section.

RINGELMANN SMOKE CHART: The Ringelmann's Scale for Grading the Density of Smoke as published by the U.S. Bureau of Mines or any chart, recorder, indicator or device which is approved by the department as the equivalent of said Ringelmann's Scale for the measurement of smoke density.

DEPARTMENT: The Department of Environmental Protection.

OPACITY: The property of a substance which renders it partially or wholly obstructive to the transmission of visible light expressed as the percentage to which the light is obstructed.

MARINE INSTALLATION: Equipment for propulsion, power or heating on all types of marine craft and floating equipment.

MOBILE SOURCE: Equipment designed or constructed to be portable or movable from one location to another including but not limited to aircraft, locomotives operating on rails, tractors, earth moving equipment, hoists and mobile power generators.

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* Consent order for Atlantic City Electric, See non compliance schedule Federal Register Publication 5/12/81

DIRECT HEAT EXCHANGER: Equipment in which heat from the combustion of fuel is transferred to a substance being heated so that the latter is contacted by the products of combustion and may contribute to the total effluent.

MANUFACTURING PROCESS: Any action, operation or treatment embracing chemical, industrial, manufacturing, or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

MOTOR VEHICLE: Any vehicle propelled otherwise than by muscular power, excepting such vehicles as run only upon rails or tracks.

7:27-3.2 - Smoke Emissions from Stationary Indirect Heat Exchangers

(a) No person shall cause, suffer, allow or permit visible smoke to be emitted into the outdoor air from the combustion of fuel in any stationary indirect heat exchanger having a rated hourly capacity of less than 200 million BTU gross heat input or discharging through a stack or chimney having an internal cross-sectional dimension of less than 60 inches.

(b) No person shall cause, suffer, allow or permit smoke the shade or appearance of which is darker than Number 1 on the Ringelmann Smoke Chart or greater than 20 percent opacity, exclusive of water vapor, to be emitted into the outdoor air from the combustion of fuel in any stationary indirect heat exchanger having a rated hourly capacity of 200 million BTU or greater gross heat input or discharging through a stack or chimney having all internal cross-sectional dimensions of 60 inches or greater.

(c) The provisions of Section 2.1 and 2.2 shall not apply to smoke which is visible for a period of not longer than three minutes in any consecutive 30 minute period.

7:27-3.3 - Smoke Emissions from Marine Installations

(a) No person shall cause, suffer, allow or permit smoke the shade or appearance of which is darker than Number 1 on the Ringelmann Smoke Chart or greater than 20 percent opacity, exclusive of water vapor, to be emitted into the outdoor air from the combustion of fuel in the indirect heat exchanger of any marine installation.

(b) The provisions of Section 3.1 shall not apply to smoke which is visible for a period of not longer than three minutes in any consecutive 30 minute period.

7:27-3.4 - Smoke Emissions from the Combustion of Fuel in Mobile Sources

No person shall cause, suffer, allow or permit smoke the shade or appearance of which is darker than Number 2 on the Ringelmann Smoke Chart or greater than 40 percent opacity, exclusive of water vapor, to be emitted into the outdoor air from the combustion of fuel in any mobile source for a period of more than 10 consecutive seconds.

7:27-3.5 - Smoke Emissions from Stationary Internal Combustion Engines and Stationary Turbine Engines

No person shall cause, suffer, allow or permit smoke the shade or appearance of which is darker than Number 1 on the Ringelmann Smoke Chart or greater than 20% opacity, exclusive of water vapor, to be emitted into the outdoor air from the combustion of fuel in any stationary internal combustion engine or any stationary turbine engine for a period of more than 10 consecutive seconds.

7:27-3.6 - Stack Test

Any person responsible for the construction, installation, alteration or use of an indirect heat exchanger shall, when requested by the Department, provide the facilities and necessary equipment for determining the density or opacity of smoke being discharged into the open air and shall conduct such smoke tests using methods approved by the Department. All smoke test data shall be recorded in a permanent log at such time intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

7:27-3.7 - Exceptions

The provisions of this chapter shall not apply to direct heat exchangers, manufacturing processes or any motor vehicle while operating upon the public highways.

Subchapter 4 - CONTROL AND PROHIBITION OF SOLID PARTICLES[*] FROM COMBUSTION OF FUEL

7:27-4.1 - DEFINITIONS

SOLID PARTICLES: Particles of rigid shape and definite volume.

PARTICLES: Any material, except uncombined water, which exists in a finely divided form as liquid particles or solid particles at standard conditions.

LIQUID PARTICLES: Particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

STANDARD CONDITIONS: Shall be 70° F. and one atmosphere pressure (14.7 psia or 760 mm Hg).

DEPARTMENT: The Department of Environmental Protection.

FUEL: Solid, liquid or gaseous materials used to produce useful heat by burning.

STACK OR CHIMNEY: A flue, conduit or opening designed and constructed for the purpose of emitting air contaminants into the outdoor air.

AIR CONTAMINANT: Solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

MAXIMUM ALLOWABLE EMISSION RATE: The maximum amount of an air contaminant which may be emitted into the outdoor air at any instant in time or during any prescribed interval of time.

HEAT INPUT RATE: The rate at which the aggregate heat content based on the higher heating value of the fuel is introduced into the fuel burning equipment.

PERFORMANCE TEST PRINCIPLE: A concept of measurement as required for determining compliance with a specific standard for the emission of air contaminants.

ISOKINETIC: A method for sampling air contaminants from the gas stream in a stack or chimney in such a manner that the gas stream enters a sampling probe in the same direction and at the same velocity as the gas stream in a stack or chimney.

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[*] Consent order for Atlantic City Electric, See non-compliance schedules Federal Register Publication 5/12/81

SAMPLING TRAIN: A combination of entrapment devices, instruments, and auxiliary apparatus arranged in a prescribed sequence to selectively separate and collect samples of specified air contaminants.

EQUIPMENT: Any device capable of causing the emission of an air contaminant into the open air and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by the manufacturing process.

MANUFACTURING PROCESS: Any action, operation or treatment embracing chemical, industrial, manufacturing, or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

CONTROL APPARATUS: Any device which prevents or controls the emission of any air contaminant.

MARINE INSTALLATION: Equipment for propulsion, power or heating on all types of marine craft and floating equipment.

7:27-4.2 - STANDARDS FOR THE EMISSION OF PARTICLES

No person shall cause, suffer, allow or permit solid particles arising from the combustion of fuel to be emitted from any stack or chimney into the outdoor air in excess of the maximum allowable emission rate as determined from Table 1. For a heat input rate between any two consecutive heat input rates stated in Table 1, the maximum allowable emission rate shall be as determined by interpolation.

HEAT INPUT RATE (Millions of British Thermal Units per Hour)	MAXIMUM ALLOWABLE EMISSION RATE (Pounds per Hour)	HEAT INPUT RATE (Millions of British Thermal Units per Hour)	MAXIMUM ALLOWABLE EMISSION RATE (Pounds per Hour)
1	0.6	200	20
10	6	400	40
20	8	600	60
30	9	800	80
40	10	1,000	100
50	11	2,000	200
60	12	3,000	300
70	13	4,000	400
80	14	5,000	500
90	14.5	6,000	600

HEAT INPUT RATE (Millions of British Thermal Units per Hour)	MAXIMUM ALLOWABLE EMISSION RATE (Pounds per Hour)	HEAT INPUT RATE (Millions of British Thermal Units per Hour)	MAXIMUM ALLOWABLE EMISSION RATE (Pounds per Hour)
100	15	7,000	700
120	16.5	8,000	800
140	17.5	10,000	1,000
160	18.5		
180	19.3		

NOTE: Heat input rate shall be the sum of the heat input rates of all fuel burning equipment discharging through a single stack or chimney.

7:27-4.3 - PERFORMANCE TEST PRINCIPLE

For purposes of measuring emissions in accordance with the provisions of this chapter, solid particles shall be drawn by isokinetic procedures from the stack or chimney and the weight of the solid particles determined gravimetrically after removal of uncombined water. The measured emission weight shall be the combined weight of all solid particles collected from the gas stream. The specifications for the sampling train and sample procedures shall be as published by the Department or approved equivalent.

7:27-4.4 - EMISSION TESTS

Any person responsible for the emission of solid particles arising from the combustion of fuel shall, when requested by the Department, provide such sampling facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the rate at which the particles are or may be discharged from the fuel burning operation. During such testing by the Department, the fuel burning operation shall be operated under normal, routine operating conditions or under such other conditions within the capacity of the equipment as may be requested by the Department. The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-4.5 - PERMIT TO CONSTRUCT, INSTALL OR ALTER AND CERTIFICATE TO OPERATE

(a) No person shall construct or install any new fuel burning equipment, or any new control apparatus, or alter any existing fuel burning equipment, or any control apparatus without first having

obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department, in accordance with the provisions of Chapter 9 of the New Jersey Air Pollution Control Code.

(b) No person shall use or cause to be used any new or altered fuel burning equipment, or any new or altered control apparatus without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department, in accordance with Chapter 9 of the New Jersey Air Pollution Control Code.

(c) No person shall use or cause to be used any fuel burning equipment unless all components connected, or attached to, or serving the equipment, including control apparatus, are functioning properly and are in use, in accordance with the Permit to Construct and the Certificate to Operate.

7:27-4.6 - EXCEPTIONS

The provisions of this Chapter shall not apply:

1. when the heat input rate to the fuel burning equipment is less than 1,000,000 British Thermal Units per hour;
2. to marine installations, vehicles or other movable or portable equipment.

Subchapter 5 - PROHIBITION OF AIR POLLUTION

7:27-5.1 - DEFINITIONS

7:27-5.2 - Prohibition of Air Pollution

(a) No person shall cause, suffer, allow or permit to be emitted into the outdoor atmosphere substances in quantities which shall result in air pollution.

(b) The provisions of subsection (a) shall not apply to:

1. any condition or occurrence which is subject to the provisions of existing or future code chapters promulgated by the Commission
2. the use of economic poisons.

Subchapter 6 - CONTROL AND PROHIBITION OF PARTICLES FROM MANUFACTURING PROCESSES

7:27:6.1 - DEFINITIONS

The following words and terms, when used in this Subchapter shall have the following meanings, unless the context clearly indicates otherwise.

AIR CONTAMINANT: Solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

CONTROL APPARATUS: Any device which prevents or controls the emission of any air contaminant.

CULLET: Broken, waste, or recycled glass.

DEPARTMENT: The Department of Environmental Protection.

DILUTION GAS: Air or gas from any source whatsoever added to the source gas emitted from a source operation.

EQUIPMENT: Any device capable of causing the emission of an air contaminant into the open air and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by the manufacturing process.

FUEL: Solid, liquid or gaseous materials used to produce useful heat by burning.

GLASS: A hard amorphous inorganic substance usually transparent and made by fusing silicates and sometimes borates and phosphates with certain basic oxides.

GLASS MANUFACTURING FURNACE: Equipment using energy in the form of intense heat for the production of glass.

INCINERATOR: Any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including, but not limited to, refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

INDIRECT HEAT EXCHANGER: Equipment in which heat from the combustion of fuel is transferred by conduction through a heat-conducting material to a substance being heated, so that the latter is not contacted by, and adds nothing to, the products of combustion.

ISOKINETIC: A method for sampling air contaminants from the gas stream in a stack or chimney in such a manner that the gas stream enters a sampling probe in the same direction and at the same velocity as the gas stream in a stack or chimney.

LEAD GLASS: A glass produced from the fusion of silica, alkali and lead oxide which is characterized by a high index of refraction, dispersion, electrical resistance, and density.

LIQUID PARTICLES: Particles which have volume but are not of rigid shape and which, upon collection, tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

MANUFACTURING PROCESS: Any action, operation or treatment embracing chemical, industrial, manufacturing or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

MAXIMUM ALLOWABLE EMISSION RATE: The maximum amount of an air contaminant which may be emitted into the outdoor air at any instant in time or during any prescribed interval of time.

OPACITY: The property of a substance which renders it partially or wholly obstructive to the transmission of visible light expressed as the percentage to which the light is obstructed.

PARTICLES: Any material, except uncombined water, which exists as liquid particles or solid particles at standard conditions.

PERFORMANCE TEST PRINCIPLE: A concept of measurement as required for determining compliance with a specific standard for the emission of air contaminants.

POTENTIAL EMISSION RATE: The mass rate of air contaminants emitted or to be emitted through a stack or chimney into the outdoor air exclusive of any type of control apparatus.

PROCESS WEIGHT: The total weight in tons of all materials introduced into a source operation excluding liquid or gaseous fuel, uncombined water, and air.

PROCESS WEIGHT PER HOUR: The rate in tons per hour for the use of all materials, introduced into a source operation excluding liquid or gaseous fuels, uncombined water, and air.

REFUSE: Rubbish, garbage, trade waste and plant life.

SAMPLING TRAIN: A combination of entrapment devices, instruments, and auxiliary apparatus arranged in a prescribed sequence to selectively separate and collect samples of specified air contaminants.

SOLID PARTICLES: Particles of rigid shape and definite volume.

SOURCE GAS: Air or gases passed through or generated by a source operation and discharged from the source operation.

SOURCE OPERATION: Any manufacturing process or any identifiable part thereof emitting an air contaminant into the outdoor atmosphere through one or more stacks or chimneys.

STACK OR CHIMNEY: A flue, conduit or opening designed, constructed and/or utilized for the purpose of emitting air contaminants into the outdoor air.

STANDARD CONDITIONS: 70 degrees Fahrenheit and one atmosphere pressure (14.7 psia or 760 mm Hg).

7:27-6.2 - STANDARDS FOR THE EMISSION OF PARTICLES

(a) No person shall cause, suffer, allow or permit particles as measured by the performance test principle set forth in Section 3 (Performance test principle) of this Subchapter to be emitted from any source operation, except as provided in subsection (b) of this Section, through any stack or chimney into the outdoor air in excess of the maximum allowable emission rate as determined below:

TABLE 1
MAXIMUM ALLOWABLE EMISSION RATE FOR PARTICLES

1	2	3	4
POTENTIAL EMISSION RATE FROM SOURCE OPERATION (lbs. per hr.)	ALLOWABLE EMISSION RATE (lbs. per hr.) (Based on 99% efficiency of collection)	SOURCE GAS EMITTED FROM SOURCE OPER. (Standard cu. ft. per min.)	ALLOWABLE EMISSION RATE (lbs. per hr.) (Based on 0.02 gains per SCF)
50 or less	0.5	3,000 or less	0.5
100	1.0	6,000	1.0
1000	10.0	35,000	6.0
2000	20.0	70,000	12.0
3000 or greater	30.0	140,000	24.0
		175,000 or greater	30.0

INSTRUCTIONS

1. From columns 1 and 2 above, determine the allowable emission rate based upon the potential emission rate of particles from the source operation. The measured emission weight shall be the combined weight of all particles collected and analyzed in accordance with the sampling and analytical procedures adopted by the Department (N.J.A.C. 7:27B-1.1 et seq.))

2. For columns 3 and 4 above, determine the allowable emission rate based upon the source gas emitted from the source operation. Whenever dilution gas is, for any purpose, added to the source gas from a source operation, the source gas emitted shall be considered to be the gas discharge rate prior to such dilution.

3. The greater of the two emission rates as determined from 1 and 2 above shall be the maximum allowable emission rate. For rates between any two consecutive values stated in columns 1 and 3, the corresponding allowable emission rates shall be as determined by interpolation.

(b) The provisions of subsection 2(a) shall not apply to any glass manufacturing furnace. Such furnace(s) shall be subject to the following:

No person shall cause, suffer, allow or permit particles as measured by the performance test principle set forth in Section 3 to be emitted from any glass manufacturing furnace through any stack or chimney into the outdoor air in excess of the maximum allowable emission rate as determined from the equation below:

A = 5 + (.48 x w)

A = maximum allowable emission rate (lbs. per hr.)

W = process weight per hour (tons per hr.)

(c) The provisions of subsections 6.2(b) and 6.5(b) shall not apply to any glass manufacturing furnace used for the production of lead glass.

(d) No person shall cause, suffer, allow or permit particles to be emitted from any stack or chimney into the outdoor air the shade or appearance of which is greater than 20 percent opacity, exclusive of visible condensed water vapor.

(e) The provisions of subsection (d) of this Section shall not apply to particles the shade or appearance of which is greater than 20 percent opacity, exclusive of visible condensed water vapor, for a period of not longer than three minutes in any consecutive 30-minute period.

7:27-6.3 - PERFORMANCE TEST PRINCIPLE

(a) For purposes of measuring emissions in accordance with the provisions of subsection 2(a) and (b) (Standards for the Emission of Particles) of this Subchapter, particles shall be drawn by isokinetic procedures from the stack or chimney and the weight of the particles determined gravimetrically after removal of uncombined water.

(b) The measured emission weight shall be the combined weight of all particles collected and analyzed in accordance with the sampling and analytical procedures adopted by the Department (N.J.A.C. 7:27B-1.1 et seq.).

24

7:27-6.4 - EMISSION TESTS

(a) Any person responsible for the emission of particles from a source operation shall, when requested by the Department, provide the facilities and necessary equipment for determining the opacity of emissions being discharged through a stack or chimney and shall conduct such opacity tests using methods approved by the Department. Opacity test data shall be recorded in a permanent log at such time intervals as specified by the Department and shall be maintained for a period of not less than one year and shall be available for review by the Department.

(b) Any person responsible for the emission of particles from a source operation shall, upon request of the Department, provide such sampling facilities and testing facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the nature and quantity of particles being emitted from the source operation. During such testing by the Department, the source operation shall be operated under normal, routine operating conditions or under such other conditions within the capacity of the source operation as may be requested by the Department. The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-6.5 - VARIANCES

(a) Whenever a person responsible for the emission of particles from a source operation believes that advances in the art of control for the kind and amount of particles emitted has not developed to a degree which would enable the requirements of Section 2 of this chapter to be attained, he may apply to the Department for a variance setting forth his reasons and justifications. The Department may issue a variance from Subsection (a) and/or (b) and such variance shall be valid for a period not to exceed five years from the date of issuance and may be renewed upon application to the Department setting forth reasons and justifications for its continuation. Variances issued under the provisions of this section shall be conditional on the compliance with any requirements which the Department deems to be necessary.

(b) Any person aggrieved by the denial or the prescribed conditions by the Department of a variance authorized by this section may, upon application made within 15 days after notice thereof, be entitled to a hearing before the Department upon at least 15 days written notice. Within 30 days after such hearing the Department shall issue a notice amending, affirming or rescinding its previous action.

7:27-6.6 - PERMIT TO CONSTRUCT AND CERTIFICATE TO OPERATE

(a) No person shall construct or install any new equipment or any new control apparatus, or alter any existing equipment or control apparatus from which particles are emitted through any stack or chimney into the outdoor air without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department, in accordance with the provisions of Subchapter 8 of this Chapter.

(b) No person shall use or cause to be used any new or altered equipment, or any new or altered control apparatus from which particles are emitted through any stack or chimney into outdoor air without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department, in accordance with Subchapter 8 of this Chapter.

(c) No person shall use or cause to be used any equipment from which particles are emitted through any stack or chimney into the air unless all components connected, or attached to, or serving the equipment, and/or control apparatus, are functioning properly and are in use, in accordance with the Permit to Construct, Install or Alter and the Certificate to Operate.

7:27-6.7 - EXCEPTIONS

The provisions of this chapter shall not apply:

1. to indirect heat exchangers

2. to incinerators

3. for a period of five years from the date of issuance of a valid permanent Certificate to Operate to a source operation equipped with control apparatus for which a valid Permit to Construct, Install or Alter or the permanent Certificate to Operate was issued by the Department during the period June 15, 1967 to March 27, 1972.

Subchapter 7 - SULFUR

7:27-7.1 - DEFINITIONS

The following words and terms used in this Subchapter shall have the following meanings, unless the context clearly indicates otherwise.

"Adjusted stack height" means the stack height modified by either a stack height adjustment factor or a stack height adjustment in feet.

"Allowable emission" means the emission in any 60 minute period expressed in pounds computed as set forth in Section 7.2(q)(Control and prohibition of air pollution from sulfur compounds) of this Chapter.

"Commercial fuel" means solid, liquid or gaseous fuels normally produced, manufactured, used or sold for the purpose of creating useful heat.

"Commissioner" means the State Commissioner of Health who is the chief administrative officer of the State Department of Health.

"Gases" means formless fluids which, under standard conditions, occupy the space of enclosure and which can be changed to the liquid of solid state only by the combined effect of increased pressure and decreased temperature.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Source operation" means any process or any identifiable part thereof emitting air contaminants into the outdoor atmosphere through one or more stacks or chimneys. For purposes of this definition identical processes shall be considered as separate source operations.

"Stack exit velocity" means the linear velocity in feet per second at which gases enter the outdoor atmosphere from a stack or chimney.

"Stack height" means the vertical distance measured in feet between the point of discharge from the stack or chimney into the outdoor atmosphere and the elevation of the land thereunder.

"Stack or chimney" means a flue, conduit or opening permitting particulate or gaseous emissions into the open air, or constructed or arranged for such purpose.

"Standard conditions" means 70° F and one atmosphere pressure (11.7 psia or 760 mm Hg).

"Sulfur compounds" means all inorganic or organic chemicals having an atom or atoms of sulfur in their chemical structure.

"Sulfur dioxide (SO_2)" means a colorless gas at standard conditions having the molecular formula SO_2.

"Sulfuric acid (H_2SO_4)" means a heavy, corrosive, oily, colorless dibasic, strong acid having the molecular formula H_2SO_4.

"Sulfuric trioxide (SO_3)" means a compound which has the molecular formula SO_3.

"Vapors" means the gaseous form of substances which under standard conditions, are in the solid or liquid state and which can be changed to these states by either increasing the pressure or decreasing the temperature.

7:27-7.2 - CONTROL AND PROHIBITION OF AIR POLLUTION FROM SULFUR COMPOUNDS

(a) No person shall cause, suffer, allow or permit sulfur compounds in the form of gases, vapors, or liquid particles to be discharged from any stack or chimney into the outdoor atmosphere except as provided in this Section.

(b) Whenever the discharge from a stack or chimney includes SO_2:

1. The concentration of SO_2 in the gases being discharged shall not exceed 2,000 ppm by volume at standard conditions except that for a period of two years following the effective date of this Subchapter, the concentration of SO_2 in the gas being discharged shall not exceed 3,000 ppm by volume at standard conditions.

2. The quantity of SO_2 which is discharged through any stack or chimney into the outdoor atmosphere in any 60-minute period shall not exceed the allowable emission as set forth in subsection (q) of this Section, and at any instant the maximum rate of emission expressed in pounds per hour shall not exceed twice the allowable emission.

(c) The provisions of subsection (b)1 of this Section shall not apply to the discharge from:

1. Any stack or chimney whenever the total volume of gases discharged does not exceed 3,000 cubic feet per minute at standard conditions, and the quantity of SO_2 discharged in any 60-minute period does not exceed 50 pounds, and at any instant the maximum rate of emission of SO_2 does not exceed 100 pounds per hour.

2. Sulfur recovery plants which are engaged in recovering elemental sulfur from hydrogen sulfide. For such plants the concentration of SO_2 in the gases being discharged from a stack or chimney shall not exceed 15,000 ppm by volume at standard conditions.

(d) Any person responsible for the discharge of SO_2 through a stack or chimney into the outdoor atmosphere shall provide the facilities and necessary equipment and shall conduct stack tests using methods approved by the Department. Such tests shall include a determination of the SO_2 concentration, the total gas volume being discharged, and the gas temperature and pressure at the sampling point in the stack or chimney, and the data shall be recorded in a permanent log at least once each hour. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

(e) Whenever the person responsible for the discharge of SO_2 can present data to the Department showing that his emissions are well under the allowable emissions or that his process produces predictable concentrations and emission rates, he may apply to the Department for a waiver or modification of the stack testing requirement. For the purpose of this subsection, existing data may be offered as substantiating evidence for such waiver or modification. If a waiver or modification is approved by the Department, the Department shall notify the person of such approval in writing.

(f) The provisions of subsection (d) of this Section shall not apply whenever the total volume of gases discharged from a stack or chimney is less than 1,000 cubic feet per minute at standard conditions.

(g) Whenever the discharge from a stack or chimney includes SO_3 and H_2SO_4:

1. The combined concentration of SO_3 H_2SO_4 in the gases being discharged, when covered and expressed as H_2SO_4 shall not exceed 10 milligrams per cubic foot at standard conditions; and

2. The combined quantity of SO_3 and H_2SO_4 discharged in any 60-minute period, when coverted and expressed as H_2SO_4, shall not exceed the allowable emission as set forth in subsection (g) of this Section and at any instant the maximum rate of emission expressed in pounds per hour shall not exceed twice the allowable emission.

(h) Any person responsible for the discharge of SO_3 and H_2SO_4 through a stack or chimney into the outdoor atmosphere shall, when requested by the Department, provide the facilities and necessary equipment for determining the combined quantity of SO_3 and H_2SO_4 being discharged from the stack or chimney and shall conduct stack tests using methods approved by the Department. Such tests may include a determination of the SO_3 and H_2SO_4 concentrations, the total gas volume being discharged, and the gas temperature and pressure at the sampling point in the stack or chimney, and the data shall be recorded in a permanent log at such time intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

(i) Whenever the discharge from a stack or chimney includes sulfur compounds in the form of gases, vapors, or liquid particles other than SO_2, SO_3 and H_2SO_4, the total quantity of sulfur in these sulfur compounds which is discharged in any 60-minute period shall not exceed the allowable emission as set forth in subsection (q) of this Section and the maximum rate of emission at any instant shall not exceed the allowable emission.

(j) Any person responsible for the discharge of sulfur compounds in the form of gases, vapors, or liquid particles other than SO_2, SO_3 and H_2SO_4, through a stack or chimney into the outdoor atmosphere shall, when requested by the Department, provide the facilities and necessary equipment for determining the combined quantity of such sulfur compounds being discharged from the stack or chimney and shall conduct stack tests using methods approved by the Department. Such tests may include a determination of the sulfur concentrations, the total gas volume being discharged, and the gas temperature and pressure at the sampling point in the stack or chimney and the data shall be reported in a permanent log at such intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

(k) The provisions of this Subchapter shall not apply to:

1. The discharge of sulfur compounds in the form of gases, vapors, or liquid particles resulting from the combustion of commercial fuel; or

2. The discharge from any stack or chimney having the sole function of relieving pressure of gas, vapor, or liquid under abnormal emergency conditions.

(l) Where combustible sulfur compounds are burned at or beyond the exit of a stack or chimney, the products of combustion shall be exempt from the concentration limits of subsection (b)1 of this Section.

(m) Whenever the person responsible for the discharge of a sulfur compound in the form of gases, vapors, or liquid particles other than SO_2, SO_3 and H_2SO_4, believes that such sulfur compound does not contribute to air pollution to the degree represented by the allowable emission, he may submit data to the Department setting forth reasons and justifications for a less restrictive allowable emission. If the change is approved by the Department, the Department shall, upon approval by the Commission, assign a revised allowable emission for such sulfur compound which shall be used for the purpose of this Subchapter.

(n) Any person responsible for the discharge of sulfur compounds in the form of gases, vapors, or liquid particles through a stack or chimney shall, upon request of the Department, provide in connection with such stack or chimney such sampling facilities and testing facilities, exclusive of instruments and sensing devices, as may be necessary for the Department to determine the quantity and concentration of such sulfur compounds which can or may be discharged through such stack or chimney. Such facilities may become permanent or temporary at the discretion of the person responsible for that decision, and such conform to all applicable laws and regulations concerning safe construction or safe practice.

(o) Whenever sulfur compounds in the form of gases, vapors, or liquid particles from one source operation are discharged through two or more stacks or chimneys, the total quantity that may be discharged from any one stack or chimney shall not exceed the allowable emission permitted for that stack or chimney, nor shall the total quantity that may be discharged from all the stacks exceed the allowable emission that would be permitted from the smoke stack or chimney having the greatest allowable emission.

(p) Any person responsible for a source operation which discharges sulfur compounds in the form of gases, vapors, or liquid particles through a stack or chimney and who in the process of starting up or shutting down such operation anticipates discharges in excess of those allowable under this Subchapter shall file an affidavit which the Commissioner stating the following:

1. The name, address and telephone number of the person submitting the affidavit; if such person is a legal entity, the name and address of the individual authorized to accept service of process on its behalf and the name of the officer in charge of the premises where the source operation is located.

2. The type of business or activity involved;

3. The general nature of the source operation and the proposed operating practice;

4. Duration of the period for which emissions or concentrations in excess of the allowable emission or concentrations can be expected and magnitude of such emissions or concentrations;

5. Frequency of start-up and shut-down;

6. Reasons why excessive emissions or concentrations cannot be avoided during the start-up and shut-down period; and

7. The Department may, for reasons set forth in the affidavit, authorize a waiver of the discharge requirements of this Subchapter; provided however, that such waiver shall not apply to any period of operation other than that period set forth as process start-up and shut-down.

(q) The allowable emission for sulfur compounds in the form of gases, vapors, or liquid particles shall be computed as follows:

1. Establish the stack height;

2. Establish the stack exit velocity in feet per second;

3. Establish the temperature in degress Fahrenheit at which the gases leave the stack;

4. The use of Tables I and II shall be as follows:

i. If the stack height is less than 200 feet, determine "Stack Height Adjustment Factor" for Table I and multiply by stack height to determine "Adjusted Stack Height in Feet".

ii. If stack height is 200 feet or greater, determine "Stack Height Adjustment in Feet" form Table II and add this value to or subtract this value from the actual stack height to determine "Adjusted Stack Height in Feet".

iii. Intermediate values shall be determined by interpolation.

5. Locate the "Adjusted Stack Height" obtained from paragraph 4 of this subsection along the left side of chart titled "Allowable Emission for Sulfur Compounds". Draw a horizontal line across the chart to the point where this line intersects the line on the chart corresponding to the sulfur compound for which the allowable emission is to be determined.

6. Draw a vertical line from the point determined by paragraph 5 of this subsection to the "Allowable Emission in Pounds per Hour" scale along the bottom of the chart. The point at which this line intersects the scale yields the "Allowable Emission in Pounds per Hour" for that sulfur compound.

NOTE: The revised sulfur limitations as set forth in New Jersey Air Control subchapter 7:1-3.1 for bituminous coal in Class 1 and Class 2 counties are not approved at this time for the following power generating stations:

Company	Plant	City	Boiler Unit(s)
Public Service Electric & Gas	Essex	Newark	All
Do	Sewaren	Sewaren	Do
Do	Burlington	Burlington	1-1
Do	Kearney	Kearney	All
Do	Bergen	Bergen	No. 1.
Do	Hudson	Jersey City	Do
Jersey Central Power & Light.	Sayreville	Sayreville	All
Do	E.H. Werner.	South Amboy	Do
Atlantic City Electric	Deepwaters	Deepwaters	8/7, 7/0 3/6, 4/0

TABLE 1--STACK HEIGHT ADJUSTMENT FACTOR

STACK EXIT VELOCITY IN FT./SEC.	200°F or less	TEMPERATURE, DEGREES F., AT WHICH THE GASES LEAVE THE STACK							1000° or greater
		300°	400°	500°	600°	700°	800°	900°	
0	0.910	0.910	0.910	0.910	0.910	0.910	0.910	0.910	0.910
5	0.928	0.930	0.932	0.933	0.934	0.935	0.935	0.936	0.936
10	0.946	0.950	0.953	0.956	0.958	0.959	0.961	0.962	0.963
15	0.964	0.970	0.975	0.978	0.981	0.984	0.986	0.988	0.989
20	0.982	0.990	0.996	1.001	1.005	1.008	1.011	1.014	1.016
25	1.000	1.010	1.018	1.024	1.029	1.033	1.037	1.039	1.042
30	1.018	1.030	1.039	1.047	1.053	1.056	1.062	1.065	1.068
35	1.036	1.050	1.061	1.070	1.077	1.082	1.087	1.091	1.095
40	1.054	1.070	1.083	1.092	1.100	1.107	1.112	1.117	1.121
45	1.072	1.090	1.104	1.115	1.124	1.131	1.138	1.143	1.148
50 OR GREATER	1.090	1.110	1.126	1.138	1.148	1.156	1.163	1.169	1.174

TABLE II--STACK HEIGHT ADJUSTMENT IN FEET

STACK EXIT VELOCITY IN FT./SEC.	TEMPERATURE, DEGREES F., AT WHICH THE GASES LEAVE THE STACK								
	200°F or less	300°	400°	500°	600°	700°	800°	900°	1000° or greater
0	-18.00	-18.00	-18.00	- 8.00	-18.00	-18.00	-18.00	-18.00	-18.00
5	-14.40	-13.99	-13.68	- 3.44	-13.24	-13.08	-12.94	-12.82	-12.72
10	-10.80	- 9.99	- 9.37	- 8.88	- 8.48	- 8.16	- 7.88	- 7.65	- 7.44
15	- 7.20	- 5.98	- 5.06	- 4.32	- 3.72	- 3.24	- 2.82	- 2.47	- 2.16
20	- 3.60	- 1.97	- 0.74	+ 0.24	+ 1.04	+ 1.68	+ 2.24	+ 2.70	+ 3.12
25	0.00	+ 2.03	+ 3.58	+ 4.80	+ 5.80	+ 6.60	+ 7.30	+ 7.88	+ 8.40
30	+ 3.60	+ 6.04	+ 7.89	+ 9.36	+10.56	+11.52	+12.36	+13.05	+13.68
35	+ 7.20	+10.05	+12.20	+13.92	+15.32	+16.44	+17.42	+18.22	+18.98
40	+10.80	+14.06	+16.52	+18.48	+20.08	+21.36	+22.48	+23.40	+24.24
45	+14.40	+18.06	+20.84	+23.04	+24.84	+26.28	+27.54	+28.58	+29.52
50 OR GREATER	+18.00	+22.07	+25.15	+27.60	+29.60	+31.20	+32.60	+33.75	+34.80

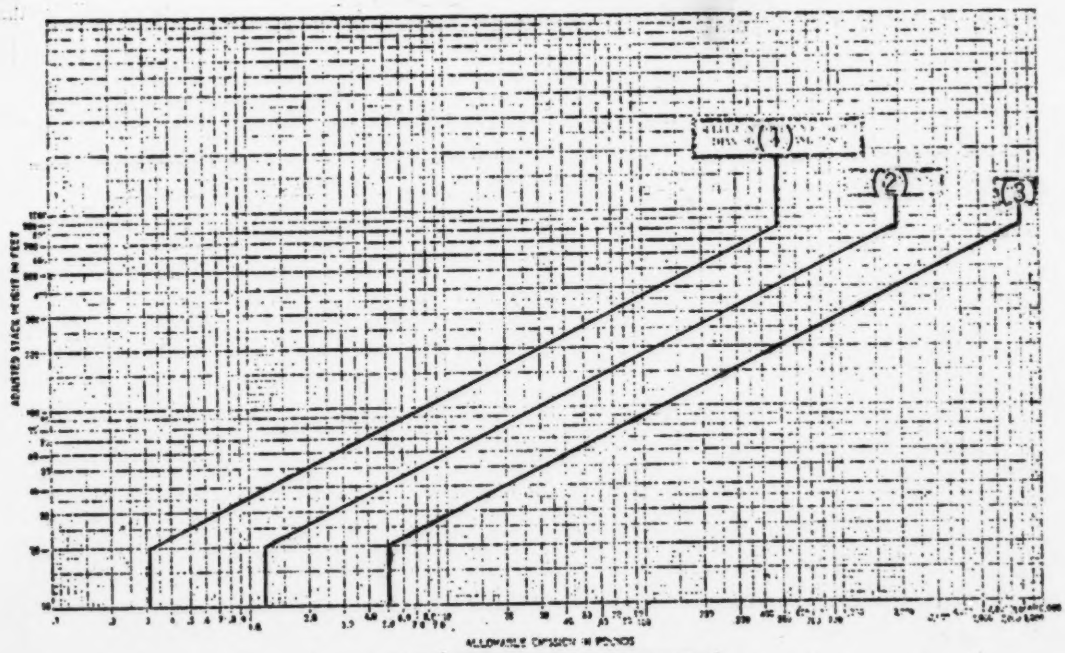
NOTE FOR TABLES I AND II EXTRAPOLATION BELOW 100° F, OR ABOVE 1000° F., OR ABOVE 50 FT. PER SEC., IS NOT PERMITTED.

ALLOWABLE EMISSION FOR SULFUR COMPOUNDS

(1) Sulfur In Compounds Other Than SO_2, SO_3, H_2SO_4

(2) H_2SO_4, SO_3

(3) SO_2



ALLOWABLE EMISSION FOR SULFUR COMPOUNDS

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Subchapter 8 - PERMITS AND CERTIFICATES

7:27-8.1 - DEFINITIONS

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise:

"Air Contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Alteration" means any change made to equipment or control apparatus or the use thereof, or in a process; including but not limited to any physical change, change in material being processed or a change in the rate of production except where such a production rate change does not increase the quantity of air contaminant emitted or does not change the quality or nature of the air contaminant emitted.

"Commerical fuel" means solid, liquid, or gaseous fuel normally produced, manufactured, used or sold for the purpose of creating useful heat.

"Control apparatus" means any device which prevents or controls the emission of any air contaminant.

"Department" means the Department of Environmental Protection.

"Equipment" means any device capable of causing the emission of an air contaminant into the open air, and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by the manufacturing process.

"Equivalent stack diameter" means the diameter of a circular cross section having the same area as the non-circular cross sections at the point of emission discharge.

"Incinerator" means any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including but not limited to refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Manufacturing process" means any action, operation or treatment embracing chemical, industrial, manufacturing, or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

"Non-commercial fuel" means solid, liquid or gaseous fuel not normally produced, manufactured, used or sold for the purpose of creating useful heat.

"Particles" means any material, except uncombined water, which exists as liquid particles or solid particles at standard conditions.

"Person" includes corporations, companies, associations, societies, firms, partnerships and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

"Solid fuel" means a fuel which is fired as a solid, such as anthracite or semianthracite coal, bituminous or sub-bituminous coal, lignite, coke breeze, wood or any solid by-porduct of a manufacturing process that may be substituted for any of the above specifically mentioned fuels.

"Solid particles" means particles of rigid shape and definite volume.

"Source operation" means any manufacturing process or any identifiable part thereof emitting an air contaminant into the outdoor atmosphere through one or more stacks or chimneys.

"Stack or chimney" means a flue, conduit or opening designed, constructed, and/or utilized or the purpose of emitting air contaminants into the outdoor air.

"Stack diameter" means the internal diameter of a circular stack at the point of emission discharge.

"Standard conditions" shall be 70^{0} F., and one atmosphere pressure (14.7 psia or 760 mm Hg).

7:27-8.2 - PERMITS AND CERTIFICATES REQUIRED

(a) Control apparatus and equipment for which a permit to construct and a certificate to operate are required include:

1. All control apparatus:

2. Equipment used in a manufacturing process involving surface coating, including but not limited to spray and dip painting, roller

coating, electrostatic depositing or spray cleaning, which emits air contaminants into the open air and in which the quantity of material used in any source operation is in excess of 10 pounds in any one hour.

3. Equipment used in a manufacturing process involving surface cleaning or preparation, including but not limited to degreasing, etching, pickling, or plating, which emits air contaminants into the open air from a tank or vessel, the capacity of which is in excess of one hundred gallons;

4. Equipment, used in a manufacturing process, other than as set forth in subsections (a)2 and (a)3 of this Section, which emits air contaminants into the open air either directly or indirectly and in which the combined weight of all materials, excluding air and water, introduced into any one source operation is in excess of 50 pounds in any one hour;

5. Tanks, reservoirs, containers and bins used for the storage of:

i. Liquids, except water, including, but not limited to, acids, solvents, diluents or thinners, inks, colorants, lacquers, enamels, varnishes, liquid resins, gasolines, crude oils, petrochemicals, commercial fuels, non-commercial fuels and petroleum derivatives; and having a capacity in excess of 10,000 gallons;

ii. Solid particles including, but not limited to, binders, fillers, foodstuffs, detergents, fluxes, catalysts, mineral wools, resins, plastics, pigments, construction materials and solid fuels; and having a capacity in excess of 2,000 cubic feet;

6. Stationary material handling equipment using pneumatic, bucket or belt conveying systems which emit air contaminants into the open air either directly or indirectly;

7. Commercial fuel burning equipment having a heat input rate of 1,000,000 BTU per hour or greater to the burning chamber;

8. Any equipment used for the burning of non-commercial fuel, crude oil or process by-products in any form;

9. Any incinerator, except incinerators constrcuted, installed or used in one or two-family dwellings or in multi-occpied dwellings containing (6) six or less family units, one of which is owner occupied.

7:27-8.3 - General Provisions

(a) No person shall construct, install or alter any equipment or control apparatus without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" for the Department. Such permits may be cancelled if construction, installation or alteration is not begun within one year from the date of issuance.

(b) No person shall use or cause to be used any new or altered equipment or control apparatus without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department. Such certificates shall be valid for a period of five years unless sooner revoked by the Department, and such certificates may be revewed only after application to the Department not less than 90 days prior to their expiration date.

(c) Upon receipt of an application for the issuance of a "Certificate to Operate Control Apparatus or Equipment" or any renewal thereof, the Department may issue a temporary certificate valid for a period not to exceed 90 days.

(d) Any person in possession of a "Certificate to Operate Control Apparatus of Equipment" shall maintain said certificate readily available on the operating premises.

(e) No person shall use or cause to be used any equipment or control apparatus unless:

1. All conditions and provisions of the "Permit to Construct, Install or Alter Control Apparatus or Equipment" and "Certificate to Operate Control Apparatus or Equipment" are fulfilled; and

2. All components connected or attached to, or serving the equipment and/or control apparatus are functioning properly and are in use in accordance with the "Permit to Construct, Install or Alter Control Apparatus or Equipment" and "Certificate to Operate Control Apparatus or Equipment".

(f) A "Certificate to Operate Control Apparatus or Equipment" shall not be transferable either from one location to another or from one piece of control apparatus or equipment to another. A transfer from one person to another is permissible provided such transfer is reported to the Department within 90 days of the occurrence.

(g) The possession of a "Certificate to Operate Control Apparatus or Equipment" does not relieve any person from the obligation to comply with all other provisions of this Chapter.

(h) Permits and certificates issued under this Subchapter are based on emissions of air contaminants only and do not in any way void the applicant's obligation to obtain necessary permits from other governmental agencies.

(i) The provisions of subsections (a) and (b) of this Section shall not apply to structural changes, repairs or maintenance, if such changes, or repairs or maintenance will not change the quality, nature or quantity of the air contaminant emitted.

7:27-8.4 - Applications for Permits and Certificates

(a) Applications for a "Permit to Construct, Install or Alter Control Apparatus or Equipment" or a "Certificate to Operate Control Apparatus or Equipment" shall be made to the Department on forms provided by the Department.

(b) The Department may require such details regarding the equipment or control apparatus as it considers necessary to determine that the equipment or control apparatus is designed to operate without causing a violation of any provisions of the New Jersey Air Pollution Control Act or any provisions of codes, rules or regulations promulgated thereunder and that the equipment or control apparatus incorporates advances in the art of air pollution control developed for the kind and amount of air contaminant emitted by the applicant's equipment. Such information may include description of processes, raw materials used, operating procedures, physical and chemical nature of air contaminants, volume of gas discharge and such other information as the Department considers necessary.

(c) Before a "Certificate to Operate Control Apparatus or Equipment" or any renewal thereof is issued, the Department may require the applicant to conduct such tests as are necessary in the opinion of the Department to determine the kind and/or amount of air contaminants emitted from the equipment or control apparatus. Such tests shall be conducted in a manner approved by the Department and shall be made at the expense of the applicant who shall give the Department no less than 48 hours advance notice of the time of the start of the test. The test results shall be reviewed and certified by the New Jersey licensed Professional Engineer, or by an Industrial Hygienist who has been certified by the American Board of Industrial Hygiene.

(d) Any person applying for a "Certificate to Operate Control Apparatus or Equipment" or a renewal thereof, or to whom such certificate has been issued shall, when requested by the Department, provide such sampling facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the kind and/or amount of air contaminants emitted from the equipment and/or control apparatus.

During such testing by the Department, the equipment and/or control apparatus shall be operated under such conditions within their capacities as may be requested by the Department. The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-8.5 - Service Fees

(a) Any person subject to the provisions of this Subchapter, except as noted in subsection 8.5 (g), shall submit with each application for a "Permit to Construct, Install or Alter Control Apparatus or Equipment", as an integral part thereof, a service fee in accordance with the following schedule:

$40.00 Base fee per "Permit to Construct, Install, or Alter Control Apparatus or Equipment" which fee shall also include the associated initial temporary "Certificate to Operate" and initial permanent "Certificate to Operate Control Apparatus or Equipment".

Plus

An Incremental Additional Service Fee to be drived from the Table shown below

INCREMENTAL ADDITIONAL SERVICE FEE

Stack Diameter or Equivalent Stack Diameter		Additional Fee
1	2	3
Not Less Than	But Less Than	
--	5ft.	$ 0.00
5	7	50.00
7	9	100.00
9	12	150.00
12	15	250.00
15	20	350.00
20ft.	and Greater	450.00

INSTRUCTIONS

1. Determine the stack diameter range or equivalent stack diameter range (feet).
2. From Columns 1 and 2, locate the applicable stack diameter range.
3. Add the additional service fee in the corresponding entry of Column 3 to the base fee.

(b) Any person subject to the provisions of this Subchapter shall submit with an application for renewal for a permanent "Certificate to Operate Control Apparatus or Equipment", as an integral part thereof, a service fee of $20.00 for each such renewal.

(c) Any person applying for a transfer fo title from one person to another for a permanent or a temporary "Certificate to Operate Control Apparatus or Equipment" shall submit a service fee of $10.00 as an integral part of each group of such applications, regardless of the number of Certificates affected by such applications.

(d) Services fees shall be submitted in the form of a certified check or postal order payable to the order of the New Jersey Bureau of Air Pollution Control.

(e) No service fee(s) or portions thereof rendered in accordance with any provisions of this Subchapter shall be returnable except in the case of overpayment due to miscalculation of the required fee.

(f) No additional service fee(s) will be levied if the information on the first submittal is found deficient and the applicant is required to provide additional information provided the additional information does not affect the service fee established in subsection 8.5 (a).

(g) Any person submitting an application for a "Permit to Construct, Install or Alter Control Apparatus or Equipment" for any storage tank shall include, as an integral part thereof, a service fee of $10.00 provided that such an application is solely for the painting of said storage tank subject to the provisions of Subchapter 16 of this Chapter.

Subchapter 9 - SULFUR IN FUELS

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise:

AERODYNAMIC DOWNWASH: The rapid descent of a plume to ground level with little dilution and dispersion due to alteration of background air flow characteristics caused by the presence of buildings or other obstacles upward of the emission point.

AMBIENT AIR QUALITY STANDARD: A limit on the concentration of a contaminant in the general outdoor atmosphere, which cannot be exceeded without causing or tending to cause injury to human health, welfare, animal or plant life or property, or unreasonably interfering with the enjoyment of life and property, excluding all aspects of employer-employee relationship as to health and safety hazards.

CARBON DIOXIDE (CO_2): A colorless, odorless gas at standard conditions, having a molecular composition of one carbon atom and two oxygen atoms.

FUEL: Gaseous, liquid or liquefiable petroleum product (excluding coal) which is produced, manufactured, used or sold for the purpose of creating useful heat.

FUEL OIL: A liquid or liquefiable petroleum product burned for lighting or for the generation of heat or power and derived directly or indirectly from crude oil.

MOTOR VEHICLE: Any vehicle propelled otherwise than by muscular power, excepting such vehicles as run only upon rails or tracks.

SSU VISCOSITY: The number of seconds it takes 60 cubic centimeters of an oil to flow through the standard orifice of a Saybolt Universal viscometer at 100 degrees Fahrenheit.

STACK OR CHIMNEY: A flue, conduit or opening designed, constructed, and/or utilized for the purpose of emitting air contaminants into the outdoor air.

SULFUR DIOXIDE (SO_2): A colorless gas at standard conditions having a molecular composition of one sulfur atom and two oxygen atoms.

VISCOSITY: The measure of a fluid's resistance to flow.

ZONE 1: Atlantic, Cape May, Cumberland, and Ocean Counties.

ZONE 2: Hunterdon, Sussex, and Warren Counties.

ZONE 3: Burlington, Camden, Gloucester, and Mercer Counties except those municipalities included in Zone 6.

ZONE 4: Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset and Union Counties.

ZONE 5: Salem County.

ZONE 6: The municipalities of Bass River Township, Shamong Township, Southampton Township, Tabernacle Township, Washington Township, Waterford Township, and Woodland Township.

7:27-9.2 SULFUR CONTENT STANDARDS

(a) No person shall store, offer for sale, sell, deliver or exchange in trade or use fuel which contains sulfur in excess of the percentages by weight set forth in Table 1.

(b) No person shall use fuel which contains sulfur in excess of the percentages by weight set forth in Table 1.

TABLE 1

		Percent Sulfur by Weight			
Typical Grades of Fuel Oil	Classification by SSU Viscosity at 100°F	Zone 1*	Zone 2 & Zone 5	Zone 3	Zone 4 & Zone 6
No. 2 & lighter	Less than or equal to 45, including gases	0.3%	0.3%	0.2%	0.2%
No. 4	Greater than 45 but less than 145	2.0%	0.7%	0.3%	0.3%
No. 5, No. 6 & heavier	Equal to or greater than 145	2.0%	1.0%	0.5%	0.3%

*Zone 1 standards shall be effective for a five year period from the effective date of this Subchapter at which time those standards in effect in Zone 2 and Zone 5 shall also apply to sources located in Zone 1.

TABLE 2

Typical Grades of Fuel Oil	Classification by SSU Viscosity at 100°F	SO_2 Emissions (lbs./10^6 BTU)			
		Zone 1	Zone 2 & Zone 5	Zone 3	Zone 4 & Zone 6
No. 4	Greater than 45 but less than 145	2.10	0.74	0.32	0.32
No. 5, No. 6 & heavier	Equal to or greater than 145	2.10	1.05	0.53	0.32

(c) The provisions of subsections (a) and (b) of this Section shall not apply to fuels whose combustion causes sulfur dioxide emissions from any stack or chimney into the outdoor atmosphere which are demonstrated to the Department as not exceeding, at any time, those quantities of sulfur dioxide expressed in pounds per 1,000,000 British Thermal Units (BTU) gross heat input, set forth in Table 2.

(d) The provisions of subsections (a), (b) and (c) of this Section shall not apply whenever a person responsible for the discharge of sulfur dioxide from a facility:

1. caused by the combustion of a combination of fuels, conforming with the standards set forth in Tables 1 and 2, in combination with facility by products; or

2. facility by products alone;

can demonstrate to the Department that his emissions are predictable and will in no case not exceed 310 ppm by volume adjusted to 12 percent carbon dioxide by volume. In such cases, the Department may establish conditions as it deems appropriate including, but not limited to, requiring sampling and analysis of emissions of sulfur dioxide periodic fuel analysis and the periodic submission of data.

(e) If the identified grade of fuel oil does not agree with the classification by viscosity set forth in Table 1 and Table 2, then the allowable percent sulfur by weight shall be determined by the viscosity classification.

7:27-9.3 EXEMPTIONS

(a) The provisions of this Subchapter shall not apply to fuel used by ocean-going vessels or in motor vehicles.

(b) The provisions of Section 9.2(a), (b) and (c) of this Subchapter shall not apply to fuel merchants or persons storing, offering for sale, and delivering or exchanging in trade, fuels that are being used in compliance with the provisions of Table 2 and/or Section 9.2(d) of this Subchapter.

(c) The Department will set such standards for the sulfur contents of fuel as may be necessary to prevent violation of air quality standards where it is determined that an aerodynamic downwash problem exists as the result of emissions from a source or sources of air pollution.

(d) The provisions of this Subchapter shall not apply to fuel oil stored exclusively for use in other states.

Subchapter 10 - SULFUR IN COAL*

7:27-10.1 DEFINITIONS

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

ANTHRACITE COAL: A hard, black lustrous coal containing 85-95 percent carbon, characterized by its small percentage of volatile matter, high specific gravity, hardness, nearly metallic luster, rich black color, and semiconchoidal fracture. Volatile matter is usually less than seven percent.

APPROVED: STACK-GAS CLEANING PROCESS: A process which removes sulfur dioxide from the product of combustion of coal and which has been approved by the Department.

BITUMINOUS COAL: A coal containing 70-85 percent carbon having usually more than seven percent volatile matter.

CANNEL COAL: A free burning variety of high volatile content bituminous or subbituminous composed almost entirely of attritus, of uniform and compact fine-grained texture with a general absence of banded structure, dark gray to black in color with a greasy luster, noticeably of conchoidal or shell-like fracture and which ignites easily, is noncaking and does not swell on heating.

COAL: Anthracite coal, bituminous coal and coke.

COAL MERCHANT: Any person who stores, offers for sale or sells coal in retail or wholesale trade, excluding agents, brokers, wholesalers, distributors or producers who sell coal for use in single steam and/or electric power generating facilities having rated hourly capacities that equal or exceed 200,000,000 British Thermal Units (BTU) gross heat input, or in a group of steam and/or electric power generating facilities at one location having a combined rated capacity which equals or exceeds 450,000,000 British Thermal Units (BTU) gross heat input.

*Consent order for Atlantic City Electric See non compliance schedule Federal Register Publication 5/12/81

COKE: A fused, cellular, porous structure that remains after free moisture and the major portion of the volatile materials have been distilled from bituminous coal and other carbonaceous material by the application of heat in the absence of air or in the presence of a limited supply of air.

STACK OR CHIMNEY: A flue, conduit or opening designed, constructed, and/or utilized for the purpose of emitting air contaminants into the outdoor air.

SULFUR DIOXIDE (SO_2): A colorless gas at standard conditions, having a molecular composition of one sulfur atom and two oxygen atoms.

ZONE ONE: Atlantic, Cape May, Cumberland and Ocean Counties.

ZONE TWO: Hunterdon, Sussex and Warren Counties.

ZONE THREE: Burlington, Camden, Gloucester, Mercer and Salem Counties.

ZONE FOUR: Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset and Union Counties.

7:27-10.2 SULFUR CONTENT STANDARDS

(a) No coal merchant shall store, offer for sale, sell, deliver or exchange in trade, for use in New Jersey, bituminous or anthracite coal which contains sulfur in excess of the percentages by weight set forth in Table 1.

TABLE 1

Existing Coal Burning Facilities

Type Coal	Maximum Allowable Percent Sulfur by Weight (Dry Basis)			
	Zone One	Zone Two	Zone Three	Zone Four
Bituminous	1.0%	1.0%	0.2%	0.2%
Anthracite	0.7%	0.7%	0.2%	0.2%

(c) The provisions of subsections (a) and (b) of this Section shall not apply:

1. To bituminous or anthracite coal whose combustion causes sulfur dioxide emissions from any stack or chimney into the outdoor atmosphere which are demonstrated to the Department as not exceeding, at any time, those quantities of sulfur dioxide expressed in pounds per 1,000,000 British Thermal Units (BTU) gross heat input, set forth in Table 2.

TABLE 2

Existing Coal Burning Facilities

Type Coal	Maximum Allowable SO_2 Emissions ($lbs/10^6$ BTU)			
	Zone One	Zone Two	Zone Three	Zone Four
Bituminous	1.5	1.5	0.3	0.3
Anthracite	1.0	1.0	0.3	0.3

2. To any coal-fired steam or electric power generating facility which is located in Zone Three or Zone Four, having a rated hourly capacity of greater than 200,000,000 British Thermal Units (BTU) gross heat input or group of facilities located in Zone Three or Zone Four having a rated hourly capacity of greater than 450,000,000 British Thermal Units (BTU) and which was in operation prior to May 6, 1968. Such facility shall be subject to the standards specified in Table 1 for Zone One.

3. In any case in which the person responsible for the use of bituminous coal believes that bituminous coal containing one percent sulfur or less by weight cannot be used in a specific steam and/or electric power generating facility, he may submit data to the Department setting forth justification for a less restrictive percent of sulfur content by weight in bituminous coal. If a change is approved by the Department, the Department shall authorize the use of a less restrictive percentage of sulfur by weight in bituminous coal. Any less restrictive percent of sulfur content by weight in bituminous coal authorized by the Department shall not exceed 1.5 percent at any time.

(d) The Department may authorize the use of bituminous coal not exceeding a maximum sulfur content of 3.5 percent by weight (dry basis) at existing facilities in Zone One if:

1. The person responsible for the use of bituminous coal demonstrates that bituminous coal, containing one percent sulfur or less by weight and suitable for use in the specific steam or electric power generating facility, is not reasonably available in sufficient quantities; and

2. Sulfur dioxide levels in the ambient atmosphere will at no time exceed or jeopardize the ambient air quality standards set forth in Subchapter 13 of this Chapter; and

3. The sulfur content of the coal burned by the facility represents the minimum sulfur content coal which can be used by the facility and is reasonably available in sufficient quantity; and

4. The person responsible for the use of bituminous coal agrees to such monitoring and reporting requirements as the Department may deem appropriate to ensure compliance with the conditions set forth in this subsection; and

5. The person responsible for the use of bituminous coal submits to the Department for such authorization an application which considers and addresses as a minimum, in addition to the above, the following criteria:

i. Physical surroundings of the coal-fired steam or electric power generating facility;

ii. Population density of the surrounding area;

iii. Dispersion characteristics of the source;

iv. Topography of the immediate vicinity;

v. Aesthetic or nuisance effects.

(e) Authorizations granted pursuant to subsection (d) shall be valid for a period not to exceed five years from the date of issuance and may be renewed upon application to the Department, setting forth reasons and justifications for such renewal, including a demonstration of continued conformance with subsection (d) of this Section.

(f) No person shall store, offer for sale, sell, deliver or exchange in trade, for use in New Jersey, or use coke which contains sulfur in excess of 0.75 percent by weight.

(51.6) 7:27-10.3 EXPANSION, RECONSTRUCTION OR CONSTRUCTION OF COAL-FIRED FUEL BURNING FACILITIES

(a) No person shall expand or reconstruct existing coal-fired steam and/or electric power generating facilities or build new coal-fired steam and/or electric power generating facilities having rated hourly capacities that equal or exceed, or would equal or exceed as a result of expansion and/or reconstruction, 1,000,000 British Thermal Units (BTU) gross heat input unless it is demonstrated to the Department:

1. That sulfur dioxide emissions, caused by the combustion of bituminous or anthracite coal, from any stack or chimney into the outdoor atmosphere can be controlled to levels that do not exceed at any time 0.30 pounds of sulfur dioxide per 1,000,000 British Thermal Units (BTU) gross heat input; or

2. That the bituminous or anthracite coal used to fire such a facility will at no time contain more than 0.20 percent sulfur by weight.

7:27-10.4 EXEMPTIONS

(a) The provisions of this Subchapter shall not apply to coal used by ocean-going vessels.

(b) In any case in which it is demonstrated to the Department that a bona fide pilot installation of a stack-gas cleaning process is to be made, the use of nonconforming coal to the extent necessary, in the judgement of the Department, to evaluate the effectiveness of the process will not be prohibited by this Subchapter.

(c) Anthracite coal containing not more than 0.7 percent sulfur by weight or cannel coal containing not more than 1.0 percent sulfur by weight, may be burned solely for heating purposes in one or two family residences only in combustion equipment in use for such purpose prior to October 1, 1971.

Subchapter 11 - INCINERATORS

7:27-11.1 - DEFINITIONS

The following terms as used in this Chapter shall mean and include:

INCINERATOR: Any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including but not limited to refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

COMMON INCINERATOR: An incinerator designed and used to burn waste materials of Types 0,1,2, and 3 only, in all capacities not exceeding 2,000 pounds per hour of waste material input.

SPECIAL INCINERATOR: Municipal, pathological waste, or trade waste incinerator of any burning capacity, or any incinerator with a burning capacity in excess of 2,000 pounds per hour.

MUNICIPAL INCINERATOR: Any incinerator owned or operated by government or by a person who provides incinerator service to government or others, and designed and used to burn waste materials of any and all types, 0 to 6 inclusive.

PATHOLOGICAL WASTE INCINERATOR: An incinerator designed and used to burn Type 4 waste materials, primarily human and animal remains, in all burning capacities. Crematoriums are included in this category.

TRADE WASTE INCINERATOR: An incinerator designed and used to burn waste material primarily of Types 5 and 6, either separately or together with waste materials of Types 0,1, and 3.

TYPE 0 WASTE: Trash, a mixture of highly combustible waste such as paper, cardboard cartons, wood boxes and combustible floor sweepings, containing approximately 10% moisture and 5% incombustible solids, and having a heating value of approximately 8500 BTU per pound as fired, and deriving from commercial and industrial activities. The mixtures contain up to 10% by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags and plastic or rubber scraps.

TYPE 1 WASTE: Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scraps, foliage and combustible floor sweepings, containing approximately 25% moisture and 10% incombustible solids and having a heating value of approximately 6500 BTU per pound as fired, and deriving from domestic, commercial and industrial activities. The mixture contains up to 20% by weight of restaurant or cafeteria waste, but contains little or no treated paper, plastic or rubber wastes.

TYPE 2 WASTE: Refuse, consisting of an approximately even mixture of rubbish and garbage by weight, containing up to 50% moisture and approximately 7% incombustible solids, and having a heating value of approximately 4300 BTU per pound as fired, and commonly deriving from apartment and residential occupancy.

TYPE 3 WASTE: Carbage, consisting of animal and vegetable wastes containing up to 70% moisture and up to 5% incombustible solids and having a heating value of approximately 2500 BTU per pound as fired and deriving from restaurants, cafeterias, hotels, hospitals, markets, and like installations.

TYPE 4 WASTE: Human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds, and similar sources, consisting of up to 85% moisture and approximately 5% incombustible solids and having a heating value of approximately 1,000 BTU per pound as fired.

TYPE 5 WASTE: By-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, et cetera, from industrial operations.

TYPE 6 WASTE: Solid by-product waste, such as rubber, plastics, wood waste, et cetera, from industrial operations.

MULTIPLE CHAMBER INCINERATOR: Any incinerator with two or more refractory-lined combustion chambers in series physically separated by refractory walls, interconnected by gas passages, and employing adequate design parameters necessary for maximum combustion of the waste materials.

NEW INCINERATOR: Any incinerator purchased or constructed after the effective date of this Chapter.

EXISTING INCINERATOR: Any incinerator purchased, acquired, or used before the effective date of this Chapter.

DEPARTMENT: The State Department of Health.

SINGLE FLUE-FED INCINERATOR: An incinerator provided with a single flue which serves as both the charging chute and the flue to transport products of combustion to the atmosphere.

PARTICLES: Any material, except uncombined water which exists in a finely divided form as liquid particles or solid particles at standard conditions.

LIQUID PARTICLES: Particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

SOLID PARTICLES: Particles of rigid shape and definite volume.

STANDARD CONDITIONS: Shall be 70° F. and one atmosphere pressure (14.7 psia or 760 mm Hg).

AUXILIARY FUEL: Fuel other than waste materials used to attain temperatures sufficiently high, (a) to dry and ignite waste materials (b) to maintain ignition thereof, or (c) to effect complete combusiton of combustible solids, vapors and gases.

SMOKE: Shall mean and include small gasborne and air-borne particles arising from a process of combustion in sufficient number to be observable.

RINGELMANN SMOKE CHART: Shall be the Ringelmann Scale for Grading the Density of Smoke published by the U. S. Bureau of Mines or any chart, recorder, indicator or device for the measurement of smoke density which is approved by the Department as the equivalent of said Ringelmann Scale.

CONTROL APPARATUS: Any device which prevents or controls the emission of any air contaminant.

7:27-11.2 - CONSTRUCTION STANDARDS

(a) MULTIPLE CHAMBERS

1. No person shall construct, install, use or cause to be used any new incinerator unless such incinerator is of the multiple chamber type or of a type approved by the Department as being equally effective for the purpose of air pollution control.

2. Two years from the effective date of this Chapter, no person shall use or cause to be used an existing incinerator unless such incinerator is of the multiple chamber type or of a type approved by the Department as being equally effective for the purpose of air pollution control.

(b) No person shall construct, install, use, or cause to be used any new single flue-fed incinerator.

7:27-11.3 - EMISSION STANDARDS

(a) PARTICLES

1. No person shall construct, install, use, or cause to be used any new common incinerator or alter or relocate and use or cause to be used any existing common incinerator which will emit more than 0.2

grains of particles including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

2. No person shall construct, install, use, or cause to be used any new special incinerator or alter or relocate and use or cause to be used any existing special incinerator which will emit more than 0.1 grains of particles including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

3. Two years from the effective date of this Chapter, no person shall use or cause to be used any existing common incinerator which will emit more than 0.2 grains of particles, including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

4. Two years from the effective date of this Chapter, no person shall use or cause to be used any existing special incinerator which will emit more than 0.1 grains of particles, including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

(b) SMOKE

1. The provisions of Subchapter 3 of the New Jersey Air Pollution Control Code insofar as they relate to smoke from incinerators are superseded by this section.

2. No person shall cause, suffer, allow or permit smoke from any incinerator the shade or appearance of which is darker than No. 1 of the Ringelmann Smoke Chart to be emitted into the open air; or emissions of such opacity within a stack or chimney, or exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated as No. 1 of the Ringelmann Smoke Chart.

3. The provisions of Subsection (b)2 shall not apply to smoke emitted during the building of a new fire, the shade or appearance of which is not greater than No. 2 of the Ringelmann Smoke Chart for a period of three consecutive minutes; or emissions of such opacity within a stack or chimney, or exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated as No. 2 of the Ringelmann Smoke Chart for a period greater than three consecutive minutes.

(c) UNBURNED WASTE AND ASH

No person shall cause, suffer, allow, or permit the emission of particles of unburned wastes or ash from any common incinerator or from any special incinerator which are individually large enough to be visible while suspended in the atmosphere.

(d) ODORS

No person shall construct, install, use or cause to be used any common incinerator or any special incinerator which will result in odors being detectable by sense of smell in any area of human use or occupancy.

(e) STACK TEST

1. Any person responsible for the construction, installation, alteration, or use of an incinerator shall, when ordered by the Department, provide the facilities and necessary equipment for determining the density of smoke being discharged from a stack or chimney and shall conduct such smoke tests using methods approved by the Department. All smoke test data shall be recorded in a permanent log at such time intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

2. Any person responsible for the use of a new or existing incinerator shall upon request of the Department provide such sampling facilities and testing facilities exclusive of instruments and sensing devices as may be necessary for the Department to determine the nature and quantity of emissions from such incinerators and shall, during such testing, operate the incinerator at a charging rate of waste no less than the designed capacity of the incinerator using materials representative of the types of wastes normally burned. Such facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction or safe practice.

7:27-11.4 - PERMIT TO CONSTRUCT AND CERTIFICATE TO OPERATE

(a) No person shall construct or install any new incinerator, or any new control apparatus, or alter any existing incinerator, or any existing control apparatus without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department, in accordance with the provisions of Chapter 9 of the New Jersey Air Pollution Control Code.

(b) No person shall use or cause to be used any new or altered incinerator, or any new or altered control apparatus without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department, in accordance with the provisions of Subchapter 8 of the New Jersey Air Pollution Control Code.

7:27-11.5 - OPERATION

(a) Written procedures to be followed for proper operation and maintenance of a new incinerator, or an altered existing incinerator, shall be submitted to the Department for review and approval together with the application for a certificate to operate.

(b) Any person in possession of a "Certificate to Operate" an incinerator shall maintain said certificate readily available on the operating premises. Operating procedures and rated burning capacity of the incinerator shall be posted at a convenient place as near as practical to the point of operation.

(c) No person shall use or cause to be used any incinerator unless all components connected, or attached to, or serving the incinerator, including control apparatus, are functioning properly and are in use, in accordance with the permit to construct, and the certificate to operate.

7:27-11.6 - EXCEPTIONS

The provisions of this Chapter shall not apply to incinerators installed or used in one or two family dwellings or in multi-occupied dwellings containing six or less family units one of which is owner occupied.

Subchapter 12 - PREVENTION AND CONTROL OF AIR POLLUTION EMERGENCIES

7:27-12.1 - DEFINITIONS

The following terms as used in this Chapter shall mean and include:

AIR CONTAMINANT: Solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

PRIMARY METALS INDUSTRIES: Establishments engaged in the smelting, refining, sintering and alloying of ferrous and non-ferrous metals from ore, pig or scrap, and the manufacture of castings, forgings, powdered metals and other basic products of ferrous or non-ferrous metals, including the production of coke.

PETROLEUM REFINING AND RELATED INDUSTRIES: Establishments engaged in petroleum refining, the manufacture of paving and roofing materials from petroleum products and compounding paving and building materials from petroleum products.

CHEMICAL AND ALLIED PRODUCTS INDUSTRIES: Establishments engaged in the manufacture of (1) basic chemicals such as acids, alkalies, salts, industrial gases and organic chemicals, (2) chemical products to be used in further manufacturing such as synthetic fibers, plastics, dry colors and pigments, (3) finished chemical products to be used for ultimate consumption such as drugs, cosmetics, soap, paints, fertilizers and explosives.

PAPER AND ALLIED PRODUCTS INDUSTRIES: Establishments engaged in manufacturing wood pulp from wood or other materials and the manufacture of paper, paperboard and building papers.

GLASS, CLAY AND CONCRETE PRODUCTS INDUSTRIES: Establishments engaged in the manufacture of glass, glassware, textile fibers, glass insulation wool, structural clay products, concrete products, gypsum and plaster products, lime, abrasives and asbestos.

7:27-12.2 - EMERGENCY CRITERIA

A condition justifying proclamation by the Governor of an AIR POLLUTION ALERT, AIR POLLUTION WARNING, or AIR POLLUTION EMERGENCY shall be deemed to exist whenever the Commissioner determines that the accumulation of air contaminants in any place, locality, county or other area in the state is attaining or has attained levels which could, if such levels are sustained or exceeded, lead to a threat to the health of the public. Such determinations shall be in accordance with criteria published in the New Jersey Register and on file with the Department.

7:27-12.3 - CRITERION FOR EMERGENCY TERMINATION

In making a determination that the threat resulting from the accumulation of air contaminants no longer exists, the Commissioner shall be guided by measurements of air quality and advisories provided by the United States Weather Service.

7:27-12.4 - STANDBY PLANS

(a) Any person responsible for the operation of a source of air contamination as set forth in Table 1 of this Section shall prepare standby plans, consistent with good industrial practice and safe operating procedures, for reducing the emission of air contaminants into the outdoor atmosphere during periods of an AIR POLLUTION ALERT, AIR POLLUTION WARNING, and AIR POLLUTION EMERGENCY. Standby plans shall be designed to reduce or eliminate emissions of air contaminants into the outdoor atmosphere in accordane with the objectives set forth in Tables I-III which are made a part of this Section.

(b) Any person responsible for the operation of a source of air contamination not set forth under Subsection (a) shall, when requested by the Department in writing, prepare standby plans, consistent with good industrial practice and safe operating procedures, for reducing the emission of air contaminants into the outdoor atmosphere during periods of an AIR POLLUTION ALERT, AIR POLLUTION WARNING, and AIR POLLUTION EMERGENCY. Standby plans shall be designed to reduce or eliminate emissions of air contaminants into the outdoor atmosphere in accordance with the objectives set forth in Tables I-III.

(c) Standby plans as required under Subsections (a) and (b) shall be in writing and show the source of air contamination, the approximate amount of reduction of contaminants and a brief description of the manner in which the reduction will be achieved during an AIR POLLUTION ALERT, AIR POLLUTION WARNING, and AIR POLLUTION EMERGENCY.

(d) During a condition of AIR POLLUTION ALERT, AIR POLLUTION WARNING, and AIR POLLUTION EMERGENCY, Standby plans as required by this Section shall be made available on the premises to any person authorized to enforce the provisions of the Air Pollution Emergency Control Act.

(e) Standby plans as required by this section shall be submitted to the Department upon request within thirty days of the receipt of such request; such standby plans shall be subject to review and approval by the Department. If, in the opinion of the Department, such standby plans do no effectively carry out the objectives as set forth in Tables I-III, the Department may disapprove said standby plans, state its reason for disapproval and order the preparation of amended standby plans within the time period specified in the order. Any person aggrieved by the order requiring the preparation of a revised plan is entitled to a hearing in accordance with C.26:2C-14.1 of the Air Pollution Control Act. If the person responsible fails within the time period specified in the order to submit an amended standby plan which in the opinion of the Department meets the said objectives, the Department may revise the standby plan to cause it to meet these objectives. Such revised plan will thereafter be the standby plan which the person responsible will put into effect upon the issuance of an appropriate order by the Governor.

TABLE I - EMISSION REDUCTION OBJECTIVES

Source of Air Contamination	Air Pollution Alert
1. Coal or oil-fired electric power generating facilities.	a. Substantial reduction by utilization of fuels having lowest available ash and sulfur content. b. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing and soot blowing. c. Substantial reduction by diverting electric power generation to facilities outside of Alert Area.
2. Coal or oil-fired process steam generating facilities having capacity to burn in excess of four tons of coal per hour or 600 gallons of fuel oil per hour.	a. Substantial reduction by utilization of fuels having lowest available ash and sulfur content. b. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing and soot blowing. c. Reduction of steam load demands consistent with continuing plant operations.
3. A Manufacturing industries of the following classifications which employ more than twenty (20) employees at any one location: Primary Metals Industries Petroleum Refining and Chemical and Allied Products Industries Paper and Allied Products Industries Glass, Clay, and Concrete Products Industries AND B Other persons required by the Department to prepare standby plans.	a. Substantial reduction of air contaminants from manufacturing operations by curtailing, postponing, or deferring production and allied operations. b. Maximum reduction by deferring trade waste disposal operations which emit particles, gases, vapors or malodorous substances. c. Reduction of heat load demands for processing consistent with continuing plant operations. d. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing or soot blowing.
4. Municipal and commercial refuse disposal operations.	a. Maximum reduction by prevention of open burning on all refuse disposal areas. b. Sustantial reduction by limiting burning of refuse in incinerators to the hours between 12:00 Noon and 4:00 P.M.

TABLE II - EMISSION REDUCTION OBJECTIVES

Source of Air Contamination	Air Pollution Warning
1. Coal or oil-fired electric power generating facilities	a. Maximum reduction by utilization of fuels having lowest available ash and sulfur content. b. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing and soot blowing. c. Maximum reduction by diverting electric power generation to facilities outside of Warning Area.
2. Coal or oil-fired process steam generating facilities having a capacity to burn in excess of four tons of coal per hour or 600 gallons of fuel oil per hour	a. Maximum reduction by utilization of fuels having the lowest available ash and sulfur content. b. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing and soot blowing. c. Reduction of steam load demands consistent with continuing plant operations. d. Making ready for use a plan of action to be taken if an emergency develops.
3. A Manufacturing industries of the following classifications which employ more than twenty (20) employees at any one location: Primary Metals Industries Petroleum Refining and Related Industries Chemical and Allied Products Industries Paper and Allied Products Industries Glass, Clay and Concrete Products Industries AND B Other persons required by the Department to prepare standby plans.	a. Maximum reduction of air contaminants from manufacturing operations by, if necessary, assuming reasonable economic hardship by postponing production and allied operations. b. Maximum reduction by deferring trade waste disposal operations which emit particles, gases, vapors or malodorous substances. c. Reduction of heat load demands for processing consistent with continuing plant operations. d. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing or soot blowing.
4. Municipal and commercial refuse disposal operations.	a. Maximum reduction by prevention of open burning on all refuse disposal areas. b. Complete elimination of the use of incinerators.

TABLE III - EMISSION REDUCTION OBJECTIVES

Source of Air Contamination	Air Pollution Emergency
1. Coal or oil-fired electric power generating facilities.	a. Maximum reduction by utilization of fuels having lowest available ash and sulfur content. b. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing and soot blowing. c. Maximum reduction by diverting electric power generation to facilities outside of Emergency Area.
2. Coal or oil-fired process steam generating facilities having a capacity to burn in excess of four tons of coal per hour or 600 gallons of fuel oil per hour.	a. Maximum reduction by reducing heat and steam demands to absolute necessities consistent with preventing equipment damage. b. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing and soot blowing. c. Taking the action called for in the Emergency plan.
3. A Manufacturing industries of the following classifications which employ more than twenty (20) employees at any one location: Primary Metals Industries Petroleum Refining & Related Industries Chemical and Allied Products Industries Paper and Allied Products Industries Glass, Clay and Concrete Products Industries AND B Other persons required by the Department to prepare standby plans.	a. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing or deferring production and allied operations to the extent possible without causing injury to persons or damage to equipment. b. Elimination of air contaminants from trade waste disposal processes which emit particles, gases, vapors or malodorous substances. c. Maximum reduction of heat load demands for processing. d. Maximum utilization of mid-day (12:00 Noon to 4:00 P.M.) atmospheric turbulence for boiler lancing or soot blowing.
4. Municipal and commercial refuse disposal operations.	a. Maximum reduction by prevention of open burning on all refuse disposal areas. b. Complete elimination of the use of incinerators.

7:27-12.5 STANDBY ORDERS

Following are standby orders which might be appropriate for use by the Governor upon his declaration that an Air Pollution Emergency exists:

(a) AIR POLLUTION ALERT

1. Any person responsible for the operation of a source of air contaminantion as set forth in Table I of 7:27-12.4 shall take all AIR POLLUTION ALERT actions are required for such source of air contamination; and shall particularly put into effect the standby plans for an AIR POLLTUION ALERT.

2. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.

3. The use of incinerators for the disposal of any form of solid waste shall be limited to the hours between 12:00 Noon and 4:00 P.M.

4. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12:00 Noon and 4:00 P.M.

(b) AIR POLLUTUION WARNING

1. Any person responsible for the operation of a source of air contaminantion as set forth in Table II of Section 4 shall take all AIR POLLUTION WARNING actions as required for such source of air contamination; and shall particularly put into effect the standby plans for an AIR POLLUTION WARNING.

2. There shall be no open burning by any persons of tree waste, vegetation, refuse or debris in any form.

3. The use of incinerators for the disposal of any form of solid waste or liquid waste shall be prohibited.

4. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12:00 Noon and 4:00 P.M.

(c) AIR POLLUTION EMERGENCY

1. Any person responsible for the operation of a source of air contamination as described in Table III of Section 4 shall take all AIR POLLUTION EMERGENCY actions as listed as required for such source

of air contamination; and shall particularly put into effect the standby plans for an AIR POLLUTION EMERGENCY.

2. All manufacturing establishments except those included in Subsection (c) 1. will institute such action as will result in maximum reduction of air contaminants from their operations by ceasing, curtailing, or postponing operations which emit air contaminants to the extent possible without causing injury to persons or damage to equipment.

3. All places of employment described below shall immediately cease operations:

(a) Mining and quarrying of non-metallic minerals.

(b) All contract construction work except that which must proceed to avoid physical harm.

(c) Wholesale trade establishments, i.e. places of business primarily engaged in selling merchandise to retailers, to industrial, commercial, institutional or professional users, or to other wholesalers, or acting as agents in buying merchandise for or selling merchandise to such persons or companies.

(d) All offices of local, county, and state government including authorities, joint meetings, and any other public body; except to the extent that such offices must continue to operate in order to enforce the requirements of this order pursuant to statute.

(e) All retail trade establishments except pharmacies and stores primarly engaged in the sale of food.

(f) Banks; credit agencies other than banks; securities and commodities brokers, dealers, exchanges and services; offices of insurance carriers, agents and brokers; real estate offices.

(g) Wholesale and retail laundries; laundry services and cleaning and dyeing establishments; photographic studios; beauty shops, barber shops; shoe repair shops.

(h) Advertising offices; consumer credit reporting, adjustment and collection agencies; duplicating, addressing, blueprinting; photocopying, mailing, mailing list and stenographic services; equipment rental services; commercial testing laboratories.

(i) Automobile repair, automobile services, garages.

(j) Establishments rendering amusement and recreation services including motion picture theaters.

(k) Elementary and secondary schools, colleges, universities, professional schools, junior colleges, vocational schools, and public and private libraries.

(4) There shall be no open burning by any person of tree waste, vegetation, refuse, or debris in any form.

(5) The use of incinerators for the disposal of any form of solid or liquid waste shall be prohibited.

(6) The use of motor vehicles is prohibited except in emergencies with the approval of local or state police.

SUBCHAPTER 13 AMBIENT AIR QUALITY STANDARDS

7:27-13.1 - DEFINITIONS

AMBIENT AIR QUALITY STANDARD: A limit on the concentration of a contaminant in the general outdoor atmosphere, which cannot be exceeded without causing or tending to cause injury to human health, welfare, animal or plant life or property, or unreasonably interfering with the enjoyment of life and property, excluding all aspects of employer-employee relationship as to health and safety hazards.

DEPARTMENT: The Department of Environmental Protection.

AIR CONTAMINANT: Solid particles, liquid particles, vapors or gases which are discharged into the outer atmosphere.

PRIMARY AIR QUALITY STANDARD: An ambient air quality standard intended to protect the public health.

SECONDARY AIR QUALITY STANDARD: An ambient air quality standard intended to protect the public welfare.

SUSPENDED PARTICULATE MATTER: Any solid or liquid matter dispersed in the outdoor atmosphere which for purposes of this chapter, shall mean the material collected and analyzed by procedures adopted and published by the Department.

SULFUR DIOXIDE (SO_2): A colorless gas at standard conditions, having a molecular composition of one sulfur atom and two oxygen atoms and which, for proposed of this chapter, shall be collected and analyzed by procedures adopted and published by the Department.

CARBON MONOXIDE (CO): A colorless, odorless, tasteless, gas at standard conditions, having a molecular composition of one carbon atom and one oxygen atom and which, for purposes of this chapter, shall be collected and analyzed by procedures adopted and published by the Department.

STANDARD CONDITIONS: Shall be 70° F. and one atmosphere pressure (14.7 psia or 760 mm Hg).

PHOTOCHEMICAL OXIDANTS: Compounds resulting from atmospheric reactions between reactive organic substances and nitrogen oxides in the presence of sunlight, and ozone and which, for purposes of this chapter, shall be collected and analyzed by procedures published and adopted by the Department.

HYDROCARBONS: Gas phase organic compounds consisting of carbon and hydrogen and the oxidation products of such compounds which serve as precursors of photochemical oxidants and which, for purposes of this chapter, shall be collected and analyzed by procedures adopted and published by the Department.

NITROGEN DIOXIDE (NO_2): A gaseous compound at standard conditions, having a molecular composition of one nitrogen atom and two oxygen atoms and which, for purposes of this chapter, shall be collected and analyzed by procedures published and adopted by the Department.

7:27-13.2 - GENERAL AMBIENT AIR QUALITY STANDARD

(a) Whereas air is vital to life and contamination of it to any degree is a condition to be endured reluctantly; and whereas our knowledge of the long-term harmful effects of low levels of contamination is incomplete and uncertain; therefore, it is the air quality objective of the Department to assure, at all times and throughout the territory of the State, ambient air of the highest purity achievable by the installation and diligent operation and maintenance of pollution source control devices and methods consistent with the lawful application of most advanced state of the art.

(b) Furthermore, it is the objective of the Department, by prevention and correction, so to enhance the quality of our outdoor air that as a minimum, and throughout the State, air quality will be in accord at least with the numerical air quality standards for specific pollutants set forth in subsequent sections of this chapter.

(c) An implementation plan of action to meet air quality standards will be adopted by the Department and, from time to time, amended as necessary. The plan will incorporate all pertinent air pollution control regulations which limit or prevent the emission into the atmosphere of air contaminants for which air quality standards have been adopted. The plan also will include interim air quality objectives whose achievement through rigorous enforcement can then be predicted.

7:27-13.3 - AMBIENT AIR QUALITY STANDARDS FOR SUSPENDED PARTICULATE MATTER

(a) PRIMARY AIR QUALITY STANDARDS

1. During any 12 consecutive months, the geometric mean value of all 24-hour averages of suspended particulate matter concentrations in ambient air shall not exceed 75 micrograms per cubic meter

and

2. during any 12 consecutive months, 24-hour average concentrations may exceed 260 micrograms per cubic meter no more than once.

(b) SECONDARY AIR QUALITY STANDARDS

1. During any 12 consecutive months, the geometric mean value of all 24-hour averages of suspended particulate matter concentrations in ambient air shall not exceed 60 micrograms per cubic meter

and

2. during any 12 consecutive months, 24-hour average concentrations may exceed 150 micrograms per cubic meter no more than once.

7:27-13.4 - AMBIENT AIR QUALITY STANDARDS FOR SULFUR DIOXIDE

(a) PRIMARY AIR QUALITY STANDARDS

1. During any 12 consecutive months, the arithmetic mean concentration for sulfur dioxide in ambient air shall not exceed 80 micrograms per cubic meter (0.03 ppm).

and

2. during any 12 consecutive months, 24-hour average concentrations may exceed 365 micrograms per cubic meter (0.14 ppm) no more than once.

(b) SECONDARY AIR QUALITY STANDARDS

1. During any 12 consecutive months, the arithmetic mean concentration of sulfur dioxide in ambient air shall not exceed 60 micrograms per cubic meter (0.02 ppm).

and

2. during any 12 consecutive months, 24-hour average concentrations may exceed 260 micrograms per cubic meter (0.1 ppm) no more than once

and

3. during any 12 consecutive months, 3-hour average concentrations may exceed 1300 micrograms per cubic meter (0.5 ppm) no more than once.

~~7:27~~-13.5 - AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE

(a) PRIMARY AND SECONDARY AIR QUALITY STANDARDS

1. During any 12 consecutive months, the 8-hour average concentration of carbon monoxide in ambient air may exceed 10 milligrams per cubic meter (9 ppm) no more than once.

and

2. during any 12 consecutive months, 1-hour average concentrations may exceed 40 milligrams per cubic meter (35 ppm) no more than once.

7:27-13.6 - AMBIENT AIR QUALITY STANDARD FOR PHOTOCHEMICAL OXIDANTS

PRIMARY AND SECONDARDY AIR QUALITY STANDARD

During any 12 consecutive months, the 1-hour average concentrations of photochemical oxidants in ambient air may exceed 160 micrograms per cubic meter (0.08 ppm) no more than once.

7:27-13.7 - AMBIENT AIR QUALITY STANDARD FOR HYDROCARBONS

PRIMARY AND SECONDARY AIR QUALITY STANDARD

During any 12 consecutive months, the average concentration of hydrocarbons, except methane, in ambient air during the 3-hour period from 6:00 a.m. to 9:00 a.m. may exceed 160 micrograms per cubic meter (0.24 ppm) no more than once.

7:27-13.8 - AMBIENT AIR QUALITY STANDARD FOR NITROGEN DIOXIDE

PRIMARY AND SECONDARY AIR QUALITY STANDARD

During any 12 consecutive months, the arithmetic mean concentration of nitrogen dioxide in ambient air shall not exceed 100 micrograms per cubic meter (0.05 ppm).

Subchapter 14 CONTROL AND PROHIBITIONS OF SMOKE FROM DIESEL-POWERED MOTOR VEHICLES

7:27-14.1 - DEFINITIONS

PERSON: Includes corporations, companies, associations, societies, firms, partnerships and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

MOTOR VEHICLE: Includes all vehicles propelled otherwise than by muscular power, excepting such vehicles as run only upon rails or tracks.

AUTOBUS: Includes all motor vehicles used for the transportation of passengers for hire.

DIESEL-POWERED MOTOR VEHICLE: A self-propelled vehicle designed primarily for transporting persons or property on a public street or highway which is propelled by a compression ignition type of internal combustion engine; for purposes of this chapter passenger automobiles and motorcycles are excluded.

DIESEL-POWERED ENGINE: A mechanism for converting energy into mechanical force and motion by using a compression ignition type of internal combustion engine.

SMOKE: Small gasborne and airborne particles, exclusive of water vapor, arising from a process of combustion in sufficient number to be observable.

OPACITY: The property of a substance which renders it partially or wholly obstructive to the transmittion of visible light expressed as the percentage to which the light is obstructed.

EXHAUST EMISSIONS: Substances emitted into the atmosphere from any opening downstream from the exhaust ports of a motor vehicle engine.

SMOKEMETER: A device constructed in such manner as to measure smoke opacity by light obstruction between a light source and photoelectric cell which will indicate the percent opacity of smoke at a point approximately six (6) inches from the engine exhaust outlet. The device shall be of design meeting "Specification for Diesel-Powered Vehicle Smokemeter" on file with the State Commissioner of Enviromental Protection and approved for use in accordance with manufacturer's recommended procedures for calibration, mounting and maintenance.

OPERATING MODE: A procedure for operating a diesel-powered motor vehicle or a diesel-powered engine during measurement of smoke opacity in the exhaust emissions.

CHASSIS DYNAMOMETER: A device constructed in such a manner as to simulate highway driving conditions on a stationary motor vehicle.

RPM - Revolutions per minute

MPH - Miles per hour

7:27-14.2 - PUBLIC HIGHWAY STANDARD

No person shall operate any diesel-powered motor vehicle or permit any diesel-powered motor vehicle which he owns to be operated upon the public highways of the State if the vehicle, when in motion, emits visible smoke in the exhaust emissions within the proximity of the exhaust outlet, for a period of more than five (5) seconds.

7:27-14.3 - INSPECTION STANDARD

(a) Any motor vehicle propelled by a diesel-powered engine which is subject to inspection at the premises or places of business of the owner or lessee by the Division of Motor Vehicles as a condition of compliance with said inspection, shall not emit smoke in the exhaust emissions in excess of the smoke opacity standards set forth in Table 1.

(b) Any autobus propelled by a diesel-powered engine which is subject to inspection at the premises or places of business of the owner or lessee by the Public Utilities Commission as a condition of compliance with said inspection shall not emit smoke opacity standard set forth in Table 2.

TABLE 1

INSPECTION STANDARDS

VEHICLES SUBJECT TO INSPECTION BY THE DIVISION OF MOTOR VEHICLES
(Reference P.L. Title 39:8-10)

Type of Inspection	Operating Mode*	Smoke Opacity Standard
Self inspection authorized by Division of Motor Vehicles at the premises or places of business of the owner or lessee	(1) Vehicle driven on chassis dynamometer with simulated load by power absorption	20%
	-alternate-	
	(2) Vehicle driven in low gear with simulated load by braking action.	20%

*PROCEDURES:

(1) VEHICLE DRIVEN ON CHASSIS DYNAMOMETER WITH SIMULATED LOAD BY POWER ABSORPTION - with smokemeter firmly positioned on the exhaust outlet and vehicle positioned on the chassis dynamometer proceed with the following steps:

STEP 1--With vehicle on a chassis dynamometer under no power adsorption, select a gear ratio which will produce a maximum vehicle speed of 45-60 MPH at governed engine RPM.

STEP 2--With engine running at governed engine RPM, apply power absorption load to the dynamometer until such loading reduces the engine RPM to 80 percent of the governed speed, the peak smoke opacity measured over a period of 5 to 10 seconds with the engine under such loading shall be the smoke opacity.

(2) VEHICLE DRIVEN IN LOW GEAR WITH SIMULATED LOAD BY BRAKING ACTION-with smokemeter firmly positioned on the exhaust outlet, proceed with the following steps:

STEP 1--Select a gear ratio which will produce a maximum speed of 10-15 MPH, at governed engine RPM, drive vehicle at 10-15 RPM at governed engine RPM.

STEP 2--Load the engine by apply brakes until engine RPM is lugged down to 80 percent of the governed engine RPM, the peak smoke opacity measured over a period of 5-10 seconds with the engine under such brake loading shall be the smoke opacity.

NOTE:

(a) All measurements are to be made after engines have been run a sufficient period of time to be at normal operating temperature.

(b) Separate measurements shall be made on each exhaust outlet on vehicles equipped with dual exhaust outlets.

TABLE 2

INSPECTION STANDARDS

VEHICLES SUBJECT TO INSPECTION BY THE PUBLIC UTILITIES COMMISSION

(Reference P.L. Title 48:4-2.1 and 2.1A, Title 48:4-18)

Type of Inspection	Operating Mode*	Smoke Opacity Standard
Inspection of Public Utilities Commission at the premises or places of business of the owner or lessee	Autobus driven with rapid acceleration	40%

*PROCEDURE:

STEP 1--With smokemeter firmly positioned on exhaust outlet and transmission engaged, drive autobus by accelerating as rapidly as possible to approximately 20 MPH.

STEP 2--Release accelerator pedal and brake to full stop.

STEP 3--The peak smoke opacity measured during the acceleration to 20 MPH shall be the smoke opacity.

NOTE:

(a) All measurements are to be made after engines have been run a sufficient period of time to be at normal operating temperature.

(b) Separate measurements shall be made on each exhaust outlet on vehicles equipped with dual and separated exhaust outlets.

(c) A single, combined measurement shall be made on the exhaust outlets on vehicles equipped with dual, adjacent exhaust outlets.

Subchapter 15 - CONTROL AND PROHIBITION OF AIR POLLUTION FROM LIGHT-DUTY GASOLINE-FUELED MOTOR VEHICLES

7:27-15.1 - DEFINITIONS

PERSON: Includes corporations, companies, associations, societies, firms, partnerships, and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

MOTOR VEHICLE: Light-duty shall mean any motor vehicle designed primarily for transportation of persons or property and registered at 6,000 pounds gross weight or less.

MODEL YEAR OF VEHICLE: The production period of new motor vehicles or new motor vehicle engines designated by the calendar year in which such period ends. If the manufacturer does not designate a production period, the model year with respect to such vehicles or engines shall mean the 12-month period beginning January of the year in which production begins.

EXHAUST EMISSIONS: Substances emitted into the atmosphere from any opening downstream from the exhaust ports of a motor vehicle engine.

CRANKCASE EMISSIONS: Substances emitted into the atmosphere from any portion of the engine crankcase ventilation or lubrication systems.

SMOKE: Small gasborne and airborne particles, exclusive of water vapor, arising from a process of combustion in sufficient number to be observable.

CARBON MONOXIDE: A non-irritating, colorless, odorless gas at standard conditions which has the molecular form of CO.

HYDROCARBONS: Compounds whose moleculars consist of atoms of hydrogen and carbon only.

APPROVED EXHAUST GAS ANALYTICAL SYSTEM: A device for sensing the amount of air contaminants in the exhaust emissions of a motor vehicle. For purposes of this Chapter this shall mean analyzing devices of the nondispersive infrared type sensitized to measure carbon monoxide at the 4.74 micron band expressed as percent carbon monoxide in air and to measure hydrocarbons as hexane at the 3.41 micron band expressed as parts per million of hydrocarbons (hexane) in air. The device shall be design meeting "SPECIFICATIONS FOR EXHAUST GAS ANALYTICAL SYSTEM" on file with the State Commissioner of Environmental Protection and approved for use in accordance with the manufacturer's recommended procedures for calibration and maintenance.

NEW MOTOR VEHICLE: A newly manufactured motor vehicle registered in New Jersey, prior to delivery to the ultimate purchaser.

NEW MOTOR VEHICLE DEALER: A sales agency, his employees, and/or agents licensed pursuant to N.J.S.A. 39:10-19 to sell new motor vehicles.

ULTIMATE PURCHASER: Any person, other than a motor vehicle dealer purchasing in his capacity as a motor vehicle dealer, who in good faith purchases a motor vehicle for purposes other than for resale as a motor vehicle dealer.

PRE-DELIVERY CHECKLIST: A schedule of items and procedures which a new motor vehicle dealer is required or requested by a manufacturer to check or follow prior to delivery of a new motor vehicle to the ultimate purchaser.

7:27-15.2 - PUBLIC HIGHWAY STANDARD

(a) No person shall operate any light-duty, gasoline-fueled motor vehicle or permit such vehicle which he owns to be operated upon the public highways of the State if the vehicle emits visible smoke in the exhaust emissions or in the crankcase emissions.

(b) The provisions of this section shall become effective July 1, 1973.

7:27-15.3 - NEW MOTOR VEHICLE DEALER INSPECTION COMPLIANCE STANDARDS

(a) Any light-duty, gasoline-fueled new motor vehicle subject to inspection by any new motor vehicle dealer in accordance with regulations promulgated by the New Jersey Division of Motor Vehicles shall, prior to delivery by the new motor dealer to the ultimate purchaser, conform to the emission specifications prescribed by the manufacturer and/or to such specifications as may be prescribed by the manufacturer in the new motor vehicle pre-delivery checklist to assure proper functioning of emission control devices. Whenever emission specifications are not prescribed, the inspection standards as set forth in 7:27-15.4(b).

(b) The provisions of this section shall become effective July 5, 1972.

7:27-15.4 - MOTOR VEHICLE INSPECTION STANDARD

(a) Any light-duty gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicles in accordance with the provisions of N.J.S.A. Title 39:8-1, as a condition of compliance with said inspection, shall not emit visible smoke in the exhaust emissions or in the crankcase emissions when using the prescribed inspection test procedure.

(b) Any light-duty, gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicles in accordance with the provisions of N.J.S.A. Title 39:8-1, as a condition of compliance with said inspection, shall not emit carbon monoxide (CO) and/or hydrocarbons (HC) in the exhaust emissions in excess of standards set forth in Table 1, when measured using an approved exhaust gas analytical system and the prescribed inspection procedure.

(c) The provisions of this section shall become effective July 5, 1972 subject to the exception set forth in Subsection 15.5(a) of this Chapter.

7:27-15.5 - EXCEPTIONS

(a) Non-compliance with standards set forth in 7:27-15.4, of this Chapter by any motor vehicle during the period July 5, 1972 to June 30, 1973 shall not be cause for rejection or reinspection.

(b) The provisions of 7:27-15.3 and 7:27-15.4 of this Chapter shall not apply to motorcycles or to motor vehicles with an engine displacement of less than 50 cubic inches.

(c) Nothing in this Chapter is intended to limit or deny the inspection of motor vehicles for exhaust systems in accordance with regulations established pursuant to N.J.S.A Title 39:8-1.

TABLE I

INSPECTION STANDARDS

VEHICLES SUBJECT TO INSPECTION BY THE DIVISION OF MOTOR VEHICLES
(Reference N.J.S.A. Title 39:8-1)

MODEL YEAR OF VEHICLE	EFFECTIVE July 5, 1972 CO(%)	HC(PPM)	EFFECTIVE July 1, 1974 CO(%)	HC(PPM)	EFFECTIVE July 1, 1975 CO(%)	HC(PPM)
Up to and including 1967	10.0	1600	8.5	1400	7.5	1200
1968-1969	8.0	800	7.0	700	5.0	600
1970-1974	6.0	600	5.0	500	4.0	400
1975 and Later					*----------	

PRESCRIBED INSPECTION TEST PROCEDURE

STEP 1: With the vehicle in neutral gear, all accessories off, handbrake secure, accelerate engine and observe emissions and crankcase emissions.

STEP 2: With the engine running at idle, insert sampling probe of gas analytical system into the engine exhaust outlet. The steady State levels measured as percent carbon monoxide and parts per million of hydrocarbons in the exhaust gas shall be the inspection test result.

NOTE: All measurements are to be made after engine has been operating a sufficient period to time to attain normal operating temperature.

*To be promulgated by amendment.

SUBCHAPTER 16

CONTROL AND PROHIBITION OF AIR POLLUTION BY VOLATILE ORGANIC SUBSTANCES

7:27-16.1 DEFINITIONS

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Asphalt" means a solid, semisolid, or liquid material of which the main constituents are bitumens.

"Batch" means the material retained in a batch operation, measured at any instant prior to, during, or at the completion of the conversion.

"Batch cycle emission rate" means the total emissions of air contaminants per batch divided by the batch cycle time in hours.

"Batch cycle time" means the total elapsed time per batch in any single manufacturing process vessel, including all phases of the operation during which the vessel contains process materials, excluding time waiting for removal from the vessel.

"Batch operation" means a type of manufacturing process in which fixed amounts of one or more process materials are introduced into a manufacturing process vessel where they are retained for a prescribed amount of time during which they are converted. Starting materials for a batch are not introduced into the vessel until the previous batch has been removed.

"Conservation vent" means any control apparatus designed and used to reduce evaporation losses of VOS by limiting the amount of air admitted to, or vapors released from, the vapor space of a closed storage vessel.

"Control apparatus" means any device which prevents or controls the emission of any air contaminant.

"Conveyorized surface cleaner" means a surface cleaner in which the parts to be cleaned are moved through by means of a continuous, automatic system.

"Cutback asphalt" means any paving asphalt which has been liquified by blending with petroleum solvents, or produced directly from the distillation of petroleum and having vaporization properties similar to the blended and liquified asphalt.

"Delivery vessel" means any mobile storage tank including, but not limited to, tank trucks or railroad tank cars.

"Department" means the Department of Environmental Protection.

"Development" means investigations in a laboratory or pilot plant directed toward the structuring or establishment of methods of manufacture or of specific designs of salable substances, devices or procedures, based upon previously discovered facts, scientific principles or substances. Development shall not include production for sale of established products through established processes; nor shall it include production in plant, works or semi-works equipment for distribution through market-testing channels.

"Dilution gas" means air or gas from any source whatsoever added to the source gas emitted from a source operation.

"Double seal floating roof" means a floating roof with two complete and separate tight seals, one above the other, containing an enclosed space between them. At least one of the seals must be supported by a mechanism which maintains constant seal contact with the inner surface of the vessel walls, despite surface and attitude irregularities.

"Emulsified asphalt" means asphalt which has been liquified by mixing with water and an emulsifying agent.

"Equipment" means any device capable of causing the emission of an air contaminant into the outdoor atmosphere, and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by a manufacturing process.

"Exclusion rate" means that rate at or below which the emission of an air contaminant into the outdoor atmosphere is not required to be controlled.

"Facility" means the combination of all structures, buildings, equipment, storage vessels, source operations, and other operations located on one or more contiguous or adjacent properties owned or operated by the same person.

"Fill pipe" means a device through which liquid is transferred into a receiving vessel.

"Floating roof" means an external or internal pontoon type or double-deck type roof resting on the surface of the liquid contents in a storage vessel, and equipped with a mechanism providing one or more tight seals in the space between the floating roof rim and the vessel shell throughout the entire vertical travel distance of the roof, or any other floating type mechanism approved by the Department for the purpose of preventing air contaminants from being discharged into the outdoor atmosphere.

"Freeboard chiller" means a heat exchanger mounted on a surface cleaner freeboard to provide a chilled air layer immediately above the VOS vapor space to reduce VOS emissions.

"Freeboard height" means 1) the vertical distance from the VOS liquid level to the lip of an unheated open top surface cleaner; 2) the vertical distance from the interface of the VOS vapor with air to the lip of a vapor surface cleaner.

"Freeboard ratio" means a ratio of the freeboard height to the tank width or narrower dimension at the tank lip.

"Gasoline" means any petroleum distillate having a Reid vapor pressure of four pounds (207 millimeters of mercury) or greater and used as an automotive fuel.

"Gasoline loading facility" means a plant for the transfer of gasoline into delivery vessels.

"Liquid particles" means particles which have volume but are not of rigid shape and which, upon collection, tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Local exhaust ventilation" means a system for capturing air contaminants within 36 inches (91.4 centimeters) of the points at which they emerge from a source operation.

"Manufacturing process" means any action, operation or treatment embracing chemical, industrial, manufacturing, or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers, or absorbers.

"Manufacturing process vessel" means any container wherein a manufacturing process, or any part thereof, takes place.

"Open top tank" means any vessel in which a manufacturing process, or any part thereof, takes place during which there is an opening to the atmosphere greater than 25 percent of the surface area of any liquid substance contained therein.

"Organic substance" means any chemical compound or mixture of chemical compounds of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbonates, metallic carbides, and ammonium carbonate.

"Particles" means any material, except uncombined water, which exists in a finely divided form as liquid particles or solid particles at standard conditions.

"Penetrating prime coat" means a low-viscosity liquid asphalt applied to a surface in order to prepare it for paving with an asphalt concrete.

"Person" means corporations, companies, associations, societies, firms, partnerships, and joint stock companies as well as individuals, and also shall include all political subdivisions of this State or any agencies or instrumentalities thereof.

"Petroleum distillate" means any mixture of VOS produced by condensing vapors of petroleum during distillation, including, but not limited to, naphthas, aviation gasoline, motor gasoline, kerosene, diesel oil, domestic fuel oil, and petroleum solvents.

"Positive pressure ventilation" means any ventilation system in which pressurized air from a compressed air manifold, fan, or similar device is blown into a work area.

"Process emission rate" means the mass rate of air contaminants emitted from the final source operation of a process, exclusive of any type of control apparatus or product recovery device.

"Receiving vessel" means any vessel into which a VOS is introduced including, but not limited to, storage tanks, delivery vessels, and manufacturing process vessels.

"Reid vapor pressure" means the absolute vapor pressure of a petroleum product at 100°F (37.8°C) as measured by the standard test method set forth in the American Society for Testing and Materials (ASTM) Designation D 323 or approved equivalent.

"Research" means investigations directed toward the discovery of facts, scientific principles, reactions, or substances.

"Solid particles" means particles of rigid shape and definite volume.

"Source gas" means air or gases passed through, or generated by, a source operation and discharged from the source operation.

"Source operation" means any manufacturing process, or any identifiable part thereof, emitting an air contaminant into the outdoor atmosphere through one or more stacks or chimneys.

"Stack or chimney" means a flue, conduit or opening designed, constructed, or utilized for the purpose of emitting air contaminants into the outdoor atmosphere.

"Standard conditions" means, or shall be, 70°F (21.1°C) and one atmosphere pressure (14.7 pounds per square inch absolute or 760.0 millimeters of mercury).

"Storage tank" means any tank, reservoir, or vessel which is a container for liquids or gases, wherein no manufacturing process, or part thereof, takes place.

"Submerged fill pipe" means a fill pipe whose point of discharge into the receiving vessel is entirely submerged when the liquid level is no more than 6 inches (15.2 centimeters) above the vessel bottom or, in the case of a top or side-entering fill pipe, when the liquid level is no more than three times the inside radius of the fill pipe plus 5 inches (12.7 centimeters), but no more than 42 inches (106.7 centimeters), above the vessel bottom.

"Surface cleaner" means a device to remove unwanted foreign matter from the surfaces of non-porous or non-absorbent materials by using VOS solvents in liquid or vapor state.

"Surface coating for insulation of magnet wire" means the application of electrically insulating varnish or enamel to aluminum or copper wire.

"Surface coating formulation" means the material including, but not limited to, paint, varnish, ink, and adhesive, applied to a solid surface in order to achieve a finished coating.

"Surface coating of automobiles and light-duty trucks" means the application, flashoff, and curing of prime and topcoat, excluding adhesives, on all components of any passenger car or passenger car derivative capable of seating 12 or fewer passengers or any motor vehicle rated at 8,500 pounds (3,856 kilograms) gross weight or less which is designed primarily for purposes of transportation of property, or a derivative of such vehicle including, but not limited to, pick-ups, vans, and window vans.

"Surface coating of cans" means exterior coating and interior spray coating in two-piece can lines; interior and exterior coating in sheet coating lines for three-piece cans; side seam spray coating and interior spray coating in can fabricating lines for three-piece cans; and sealing compound application and sheet coating in end coating lines.

"Surface coating of coils" means the coating of any flat metal sheet or strip available in rolls or coils.

"Surface coating of fabrics" means the application of any coating, except vinyl plastisol, applied to a textile substrate in a fabric coating line or vinyl coating line.

"Surface coating of large appliances" means the application of any coating to the component parts including, but not limited to, doors, cases, lids, panels, and interior supports of residential and commercial washers, dryers, ranges, refrigerators, freezers, water heaters, dish washers, trash compactors, air conditioners, and other associated products.

"Surface coating of metal furniture" means the coating in a metal furniture coating line of any metal part which will be assembled with other metal, wood, fabric, plastic, or glass parts to form a furniture piece.

"Surface coating of paper" means the application of any coating, uniformly distributed across the web, which is put on paper, or on pressure-sensitive tapes regardless of substrate (including paper, fabric, or plastic film); related web coating processes on plastic film including, but not limited to, typewriter ribbons, photographic film, and magnetic tape; and decorative coatings on metal foil including, but not limited to, gift wrap and packaging.

"Surface coating operation" means the application and solidification of a surface coating formulation.

"Tank" means any container whose walls are constructed of material which is rigid and self-supporting.

"Transfer efficiency" means the percent by weight, on a dry basis, of the total coating solids applied to an object which adhere to the object.

"Transfer operation" means the moving of any substance from any storage tank, manufacturing process vessel, or delivery vessel into any receiving vessel.

"Vapor" means the gaseous form of substances which, under standard conditions, are in the solid or liquid state and which can be changed to these states by either increasing the pressure or decreasing the temperature.

"Vapor balance system" means a system for controlling vapor losses during the transfer of a VOS liquid from one vessel to another vessel or tank by means of the simultaneous counter-transfer of displaced vapors from the receiving vessel to the vessel supplying the liquid.

"Vapor control system" means a system for preventing the emission of organic vapors into the outdoor atmosphere.

"Vapor pressure" means the pressure of the vapor phase of a substance, or the sum of the partial pressures of the vapor phases of individual substances in a mixture of substances, when in equilibrium with the non-vapor phase of the substance or substances.

"Vapor-tight" means not capable of allowing the passage of gases at the pressures encountered.

"Vinyl coating" means any printing, decorative topcoat, or protective topcoat applied over vinyl-coated fabric or vinyl sheets.

"Volatile organic substances," herein abbreviated as VOS, means any organic substances, mixture of organic substances, or mixture of organic and inorganic substances including, but not limited to, petroleum crudes, petroleum fractions, petrochemicals, solvents, diluents, and thinners, excluding methane, which have vapor pressures or partial pressures of organic substances of 0.02 pounds per square inch (1 millimeter of mercury) absolute or greater measured at standard conditions; and, in the case of surface coating formulations, includes any coalescing or other agent, regardless of vapor pressure, which evaporates from the coating during the drying phase.

7:27-16.2 STORAGE OF VOLATILE ORGANIC SUBSTANCES

(a) 1. No person shall cause, suffer, allow or permit the storage of a VOS in any stationary storage tank having a capacity greater than 2,000 gallons (7,570 liters) exposed to the rays of the sun unless the external surface of the tank is painted and maintained white.

2. The provisions of subsection (a)1 of this Section shall not apply to words and logograms applied to the external surface of a storage tank for purposes of identification provided such symbols do not cover more than 20% of the external surface area of the tank's sides and top or more than 200 square feet (18.6 square meters), whichever is less.

(b) No person shall cause, suffer, allow or permit the storage of a VOS in any stationary storage tank having a maximum capacity of 10,000 gallons (37,850 liters) or greater unless such stationary storage tank is equipped with control apparatus as determined in accordance with the procedure for using Table 1 or as approved by the Department as being equally or more effective in preventing the emission of VOS into the outdoor atmosphere.

Procedure for Using Table I

Step 1: Determine the vapor pressure at standard conditions in pounds per square inch absolute of the VOS to be stored.

Step 2: Select the appropriate line in Table 1 for the vapor pressure determined in Step 1.

Step 3: Determine the maximum tank capacity in thousands of gallons.

Step 4: Find the tank capacity range classification for the vapor pressure determined under Step 1.

Step 5: Determine the control requirements in accordance with the following:

Range I : No control apparatus required under this subsection.

Range II : Conservation vent required.

Range III: Floating roof required.

(c) No person shall cause, suffer, allow or permit the storage of a VOS having a vapor pressure of greater than 13.0 pounds per square inch absolute (672 millimeters of mercury) at the actual temperature existing at or near the liquid surface in any stationary storage tank having a maximum capacity of 1,000 gallons (3,785 liters) or greater unless such tank is equipped with a vapor control system to reduce the rate of VOS emissions to the outdoor atmosphere by at least 90 percent by weight of their process emission rate.

(d) No person shall cause, suffer, allow or permit the storage of a VOS in any stationary storage tank subject to the provisions of either subsection (b) in Ranges II and III or subsection (c) of this Section and equipped with gauging and/or sampling systems unless such systems are vapor-tight except when gauging or sampling is taking place.

(e) The provisions of subsections (b) and (c) of this Section shall not apply to a stationary storage tank in Range II located underground at a depth of no less than eight inches (20.3 centimeters) below the surface measured to the highest point of the tank shell, or installed in other manner approved by the Department as being equally or more effective in preventing the emission of VOS into the outdoor atmosphere.

(f) The provisions of subsection (a) of this Section shall not apply to any storage tank:

1. Maintained under a controlled elevated temperature; or

2. Equipped with a vapor control system reducing by at least 98% the weight of process VOS emissions to the outdoor atmosphere.

TABLE 1

DETERMINANTS OF TYPE CONTROL APPARATUS REQUIRED FOR STORAGE OF VOLATILE ORGANIC SUBSTANCES

VAPOR PRESSURE IN PSIA @ 70°F		TANK CAPACITY IN THOUSANDS OF GALLONS			
		Range I	Range II		Range III
Greater than	But not Greater than	Not Greater than	Greater than	But not Greater than	Greater than
*0.02	0.03	4,500	4,500	14,000	14,000
0.03	0.04	4,500	4,500	11,000	11,000
0.04	0.06	3,500	3,500	8,000	8,000
0.06	0.08	2,500	2,500	6,000	6,000
0.08	0.10	2,000	2,000	4,500	4,500
0.10	0.15	1,600	1,600	3,500	3,500
0.15	0.2	1,050	1,050	2,500	2,500
0.2	0.3	750	750	1,600	1,600
0.3	0.4	550	550	1,250	1,250
0.4	0.5	475	475	1,075	1,075
0.5	0.6	400	400	900	900
0.6	0.7	350	350	750	750
0.7	0.8	300	300	650	650
0.8	1.0	260	260	550	550
1.0	1.2	210	210	475	475
1.2	1.4	190	190	400	400
1.4	1.6	170	170	350	350
1.6	1.8	150	150	300	300
1.8	2.1	125	125	260	260
2.1	2.4	110	110	225	225
2.4	2.7	100	100	200	200
2.7	3.0	90	90	180	180
3.0	3.5	80	80	160	160
3.5	4.0	70	70	145	145
4.0	4.5	60	60	130	130
4.5	5.0	50	50	115	115
5.0	5.5	50	50	105	105
5.5	6.0	50	50	95	95
6.0	6.5	40	40	85	85
6.5	7.0	40	40	75	75
7.0	7.5	40	40	70	70
7.5	8.0	35	35	65	65
8.0	8.5	35	35	60	60
8.5	9.5	30	30	55	55
9.5	10.5	25	25	50	50
10.5	11.5	20	20	45	45
11.5	13.0	10	10	40	40

*VOS which have a vapor pressure of 0.02 pounds per square inch absolute at 70°F shall be included in this line.

(g) Any stationary storage tank in Range III as determined from Table 1, constructed or installed on or after the effective date of this Subchapter, shall be provided with a double seal floating roof or other control apparatus approved by the Department as being equally or more effective in preventing the emission of VOS into the outdoor atmosphere.

(h) Any delivery vessel used for storing VOS for more than one month shall be considered a stationary storage tank for the purposes of this Section. The provisions of this subsection shall become effective on April 1, 1980.

7:27-16.3 TRANSFER OPERATIONS

(Not approved only insofar as it deals with gasoline transfer in the New Jersey portion of NY-NJ-CT and Metropolitan Philadelphia AQCRs)

(a) No person shall cause, suffer, allow or permit the transfer of any VOS into any receiving vessel of 2,000 gallons (7570 liters) or greater capacity unless such transfer is made through a submerged fill pipe or by other means approved by the Department as being equally or more effective in preventing the emission of VOS into the outdoor atmosphere during transfer.

(b) The provisions of subsection (a) of this Section shall not apply to manufacturing process vessels installed before the effective date of this Subchapter.

(c) No person shall cause, suffer, allow or permit the transfer of gasoline from any delivery vessel into any stationary storage tank of 2,000 gallons (7570 liters) or greater capacity unless such storage tank is equipped with and operating one of the following controls:

1. A vapor balance system with all atmospheric vents positively closed during transfer; or

2. A vapor balance system with a conservation vent adjusted to remain closed during the transfer; or

3. A vapor balance system with a drilled cap on the atmospheric vent, the drilled hole not to exceed 1/4 inch (6.4 millimeters) in diameter; or

4. A vapor control system which prevents emissions of more than 6.7 pounds of VOS per 10,000 gallons (80 milligrams per liter) of gasoline transferred; or

5. A floating roof or equivalent approved by the Department.

(d) No person shall cause, suffer, allow or permit the transfer of gasoline into any delivery vessel of 2,000 gallons (7570 liters) or greater total capacity unless such delivery vessel is connected to control apparatus installed and operating in accordance with the provisions of subsection (e) of this Section.

(e) No person shall cause, suffer, allow or permit the transfer or loading of gasoline from a gasoline loading facility unless such facility is equipped with and operating a control apparatus in accordance with the following provisions:

1. Facilities loading more than 4,000 gallons (15,140 liters) per day, but not more than 15,000 gallons (56,775 liters) per day, shall be equipped with and operating a vapor balance system or other control apparatus of equal or higher efficiency. Such vapor balance system shall have no open operating vent to the atmosphere during transfer and shall not return the vapors to any tank equipped with a floating roof.

2. Facilities loading more than 15,000 gallons (56,775 liters) per day shall be equipped with and operating a vapor control system which:

i. Prevents gasoline emissions to the outdoor atmosphere from exceeding the maximum allowable emissions as determined from Table 2; or

ii. Reduces the total emissions of VOS by no less than 90 percent by weight as demonstrated by an emissions test approved by the Department.

TABLE 2

EMISSION STANDARDS FOR GASOLINE LOADING FACILITIES LOADING MORE THAN 15,000 GALLONS (56,775 LITERS) PER DAY

Concentration of VOS in Gas Displaced from Delivery Vessel, Volume Percent		Maximum Allowable Emissions per Volume Unit Loaded	
Greater Than	But Not Greater Than	Pounds per Ten Thousand Gallons	Milligrams per Liter
50	—	6.7	80
40	50	5.8	70
30	40	5.0	60
20	30	4.2	50
15	20	3.8	45
0	15	3.3	40

The daily loading rate shall be calculated on the basis of the daily average rate during the month with the highest throughput in the last 12 months operated.

(f) The provisions of subsection (d) of this Section shall not apply to delivery vessels used for less than one month for the purpose of holding gasoline from a storage tank during a period in which the storage tank is undergoing repair or maintenance.

(g) No person shall cause, suffer, allow or permit the transport of any VOS in a delivery vessel of 2,000 gallons (7570 liters) or greater capacity unless such vessel is vapor-tight at all times while containing VOS except:

1. Under emergency conditions; or

2. While gauging; or

3. While venting through a vapor control system approved by the Department.

(h) The provisions of Section 16.3 of this Subchapter shall not apply to the transfer of VOS into marine delivery vessels.

(i) Any person responsible for a source operation located in the Counties of Atlantic, Cape May, Cumberland, Hunterdon, Ocean, Sussex, or Warren subject to, but not in compliance with, the provisions of subsections (c), (d), or (e) of this Section, shall comply with the following schedule:

1. By June 1, 1980, a completed application for a "Permit to Construct, Install, or Alter Control Apparatus or Equipment" which demonstrates compliance with the requirements of subsections (c), (d), and (e) of this Section shall be submitted to the Department.

2. By March 1, 1981, construction of equipment and control apparatus in accordance with an approved "Permit to Construct, Install, or Alter Control Apparatus or Equipment" shall commence.

3. By August 1, 1981, compliance with the requirements of this Section shall be achieved.

(j) Any person responsible for a source operation not located in the Counties of Atlantic, Cape May, Cumberland, Hunterdon, Ocean, Sussex, or Warren subject to the provisions of subsections (c), (d), and (e) of this Section shall comply with subsection (c) by June 1, 1980 and with subsections (d) and (e) by June 1, 1981.

7:27-16.4 OPEN TOP TANKS AND SURFACE CLEANERS

(a) No person shall cause, suffer, allow or permit the use of VOS in any unheated or heated open top tank unless such tank is covered by a lid which protects the VOS vapors from drafts and diffusion when the tank is not in active use.

(b) No person shall cause, suffer, allow or permit the use of VOS in any unheated open top surface cleaner having a top opening of more than 6 square feet (0.56 square meters) but not more than 25 square feet (2.3 square meters) unless such cleaner:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained VOS; and

2. Is equipped with a rack or mechanism for ensuring that all draining liquid VOS returns into the surface cleaner VOS bath; and

3. Is devoid of any flushing wand which produces VOS droplets or mist or which delivers a stream of VOS under a line pressure in excess of 15 pounds per square inch gauge (776 millimeters of mercury gauge); and

4. Is devoid of any agitating system which causes splashing of VOS; and

5. Has a freeboard ratio of 0.5 or greater.

(c) No person shall cause, suffer, allow or permit the use of VOS in any unheated open top surface cleaner having a top opening of more than 25 square feet (2.3 square meters) unless such cleaner:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained VOS; and

2. Is equipped with a rack or mechanism for ensuring that all draining liquid VOS returns into the surface cleaner VOS bath; and

3. Is devoid of any flushing wand which produces VOS droplets or mist or which delivers a stream of VOS under a line pressure in excess of 15 pounds per square inch gauge (776 millimeters of mercury gauge); and

4. Is devoid of any agitating system which causes splashing of VOS; and

5. Blocks drafts from contact with VOS vapors by:

   i. having a freeboard ratio of 0.75 or greater; or

   ii. having a freeboard ratio of 0.5 or greater, and being separated from other activities, and from open windows and doors by means of walls or screens.

(d) No person shall cause, suffer, allow or permit the use of VOS in any heated open top tank which is operated at a temperature lower than the boiling point of such VOS unless such tank:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained VOS; and

2. Is devoid of any agitating system which causes splashing of VOS; and

3. Blocks drafts from contact with VOS vapors by:

   i. having a freeboard ratio of 0.75 or greater; or

   ii. having a freeboard ratio of 0.5 or greater, and being separated from other activities, and from open windows and doors by means of walls or screens; and

4. Has a thermostat or approved equivalent which automatically maintains the VOS temperature below the boiling point.

(e) No person shall cause, suffer, allow or permit the use of VOS in any open top vapor surface cleaner unless such cleaner:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained liquid VOS; and

2. Is equipped with a rack or mechanism for ensuring that all draining liquid VOS returns into the surface cleaner VOS bath; and

3. Is devoid of any flushing wand which produces VOS droplets or mist or which delivers a stream of VOS under a line pressure in excess of 15 pounds per square inch gauge (776 millimeters of mercury gauge); and

4. Is devoid of any agitating system which causes splashing of VOS; and

5. Blocks drafts from contact with VOS vapors by:

   i. having a freeboard ratio of 0.75 or greater; or

   ii. having a freeboard ratio of 0.5 or greater, and being separated from other activities, and from open windows and doors by means of walls or screens; and

6. Has a visible high-level vapor mark which shall not be exceeded by the VOS; and

7. Is free from the influence of any local exhaust ventilation system unless such ventilation system collects at least 80% by volume of the VOS vapors leaving the cleaner, and reduces the vapors collected by at least 85% by volume; and

8. Is free from the influence of any positive pressure source located within 20 feet of the tank rim unless the cleaner is equipped with and operates a means of collecting at least 80% by volume of the VOS vapors leaving the cleaner, and reduces the vapors collected by at least 85% by volume; and

9. Is operated with a condenser having heat removal capacity equal to or greater than the heat input rate into the liquid VOS bath; and

10. Is equipped with a device which automatically shuts off the heat input to the VOS if the temperature above the condensing surfaces or the temperature of the condensate exceeds the manufacturer's specifications; and

11. Is equipped with a freeboard chiller through which circulates a cooling fluid having a temperature no higher than 40°F (4.4°C) at any point in the chiller, or with other apparatus approved by the Department as being equally or more effective in reducing emissions. Cleaners with top openings no greater than 25 square feet (2.3 square meters) are not subject to this requirement.

(f) No person shall cause, suffer, allow or permit the use of VOS in any unheated conveyorized surface cleaner unless such cleaner:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained VOS; and

2. Is devoid of any flushing wand which produces VOS droplets or mist or which delivers a stream of VOS under a line pressure in excess of 15 pounds per square inch gauge (776 millimeters of mercury gauge); and

3. Is devoid of any agitating system which causes splashing of VOS; and

4. Is protected from drafts when not in active use by the installation of covers over the conveyor inlet and conveyor outlet ports and over any other openings; and

5. Is protected from drafts when in active use by the installation of silhouette cutouts or hanging flaps to minimize the effective openings around the conveyor inlet and conveyor outlet ports; and

6. Is equipped with a vapor control system which recovers or removes at least 85% by volume of the vapors emitted from the cleaner. Cleaners installed before the effective date of this Subchapter are not subject to this requirement.

(g) No person shall cause, suffer, allow or permit the use of VOS in any conveyorized heated surface cleaner unless such cleaner:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained VOS; and

2. Is devoid of any flushing wand which produces VOS droplets or mist or which delivers a stream of VOS under a line pressure in excess of 15 pounds per square inch gauge (776 millimeters of mercury gauge); and

3. Is devoid of any agitating system which causes splashing of VOS; and

4. Has a thermostat or approved equivalent which automatically maintains the VOS temperature below the boiling point; and

5. Is protected from drafts when not in active use by the installation of covers over the conveyor inlet and conveyor outlet ports and over any other openings; and

6. Is protected from drafts when in active use by the installation of silhouette cutouts or hanging flaps to minimize the effective openings around the conveyor inlet and conveyor outlet ports.

(h) No person shall cause, suffer, allow or permit the use of VOS in any conveyorized vapor surface cleaner unless such cleaner:

1. Has a visible high-level liquid mark which shall not be exceeded by the contained liquid VOS; and

2. Is devoid of any flushing wand which produces VOS droplets or mist or which delivers a stream of VOS under a line pressure in excess of 15 pounds per square inch gauge (776 millimeters of mercury gauge); and

3. Is devoid of any agitating system which causes splashing of VOS; and

4. Is operated with a condenser having heat removal capacity equal to or greater than the heat input rate into the liquid VOS bath; and

5. Is equipped with a device which automatically shuts off the heat input to the VOS if the temperature above the condensing surfaces or the temperature of the condensate exceeds the manufacturer's specifications; and

6. Is protected from drafts when not in active use by the installation of covers over the conveyor inlet and conveyor outlet ports and over any other openings; and

7. Is protected from drafts when in active use by the installation of silhouette cutouts or hanging flaps to minimize the effective openings around the conveyor inlet and conveyor outlet ports; and

8. Is equipped with:

   i. a freeboard chiller through which circulates a cooling fluid having a temperature no higher than 40°F (4.4°C) at any point in the chiller; or

   ii. a vapor control system which recovers or removes at least 85% by volume of the vapors emitted from the cleaner.

(i) No person shall cause, suffer, allow, or permit the use of any oil-water separator unless such separator is covered with a lid while containing VOS. Sections of oil-water separators containing essential powered mechanical devices operating above the liquid level are not subject to this requirement.

(j) No person shall cause, suffer, allow or permit the use of VOS in any open top tank or surface cleaner unless such use follows written operating, inspection and maintenance instructions prepared in accordance with guidelines issued by the Department.

(k) Any person subject to the provisions of subsection (j) of this Section shall ntain a training program to ensure that all personnel associated with the use or operation of the open top tank or surface cleaner understand and follow the specified procedure.

(l) Copies of operating instructions and maintenance instructions must be located at the open top tank or surface cleaner. Copies shall be supplied to the Department when requested and must be accompanied by similar documents supplied by the equipment manufacturer, with explanations for differences between the two.

(m) The written procedures required by this Section shall be submitted to the Department upon request within 10 days of the receipt of such request; such procedure shall be subject to review and approval by the Department. If, in the opinion of the Department, such procedure does not fulfill the requirements of this Section, the Department may state its reason for disapproval and order the preparation of an amended procedure within the time period specified in the order. If the person responsible fails within the time period specified in the order to submit an amended procedure which, in the opinion of the Department, fulfills the said requirements, the Department may revise the procedure accordingly. Such revised procedure will thereafter be that which the person responsible must carry out.

(n) Any person subject to the provisions of this Section shall notify the Department in writing within 15 days of any revision or alteration of a procedure approved pursuant to the provisions of subsection (j) of this Section. Such written notification shall include a detailed description of the changes in the procedure and the reasons therefor. Such amended procedure shall be subject to review and approval by the Department.

(o) Any person subject to the provisions of subsections (a) through (i) of this Section shall comply with the following schedule:

1. By July 1, 1980, a plan must be submitted to the Department describing the measures which will be applied in order to achieve compliance. The plan submittal shall include completed applications for all required "Permits to Construct, Install, or Alter Control Apparatus or Equipment" and "Certificates to Operate Control Apparatus or Equipment".

2. By January 1, 1981, construction or installation of equipment and control apparatus shall commence.

3. By July 1, 1981, compliance shall be achieved.

(p) The provisions of subsections (j) through (n) of this Section shall become effective on July 1, 1981.

(q) The provisions of subsection 16.4(a) of this Subchapter shall not apply to:

1. Open top tanks used solely for the application of electrophoretic dip prime coatings to automobiles and light duty trucks.

2. Open top tanks used in a waste water treatment system, provided the VOS emitted from such tanks does not exceed a concentration of 5,000 parts per million by volume measured at any point above the liquid surface at the height of the tank lip.

7:27-16.5 SURFACE COATING OPERATIONS

(a) No person shall cause, suffer, allow or permit VOS emissions from a surface coating operation to exceed the maximum allowable hourly emission rate as determined by multiplying the maximum allowable emissions per volume of coating, minus water, as set forth in Table 3A or in Table 3B of this Section times the volume of coating applied per hour. If more than one product is manufactured on a single surface coating line, a weighted daily mean of the emissions can be calculated to demonstrate compliance by multiplying the maximum allowable emission per volume of coating, minus water, for each formulation times the number of gallons used.

(b) Any surface coating operation installed after the effective date of this Subchapter shall use a coating application system having a transfer efficiency of no less than 60 percent.

(c) The provisions of subsections (a) and (b) of this Section shall not apply to any surface coating source operation in which the total surface coating formulations containing VOS are applied:

1. At rates not in excess of 1 gallon per hour and 5 gallons per day; or

2. For the purpose of developing new coatings or new coating equipment, or for the purpose of performing research preceding such development provided such formulations are applied at rates not in excess of 2 gallons per hour and 3 gallons per day.

(d) Any person subject to the emission standards specified in Table 3A pertaining to spray prime and spray topcoat surface coating formulations may, as an alternative to the maximum allowable emissions set forth in Table 3A, comply with the provisions of Table 3C.

TABLE 3A

MAXIMUM ALLOWABLE EMISSIONS FOR AUTOMOBILE AND LIGHT DUTY TRUCK SURFACE COATING OPERATIONS

Type of Operation	Maximum Allowable Emissions per Volume of Coating (minus water)		Final Compliance Date
	Pounds per Gallon	Kilograms per Liter	
Automobile & Light Duty Truck Coating			
Prime			
Electrophoretic dip prime	1.2	0.14	December 31, 1982
Spray prime	2.8	0.34	December 31, 1984
Topcoat			
Spray topcoat	2.8	0.34	December 31, 1984
Repair			
Spray	4.8	0.58	December 31, 1986

TABLE 3B

MAXIMUM ALLOWABLE EMISSIONS FOR MISCELLANEOUS SURFACE COATING OPERATIONS

Type of Operation	Maximum Allowable Emissions per Volume of Coating (minus water)	
	Pounds per Gallon	Kilograms per Liter
Can Coating		
Sheet basecoat Two-piece can exterior	2.8	0.34
Two- & three-piece can interior body spray, two-piece end exterior	4.2	0.51
Side-seam spray	5.5	0.66
End sealing compound	3.7	0.44
Coil Coating	2.6	0.31
Fabric Coating	2.9	0.35
Vinyl Coating	3.8	0.45
Paper Coating	2.9	0.35
Metal Furniture Coating	3.0	0.36
Magnet Wire Coating	1.7	0.20
Large Appliance Coating	2.8	0.34

TABLE 3C

ALTERNATIVE MAXIMUM ALLOWABLE EMISSIONS WITH MINIMUM TRANSFER EFFICIENCIES REQUIRED FOR SPRAY COATING OPERATIONS

Maximum Allowable Emissions per Volume of Coating (minus water)		Minimum Transfer Efficiency Required
Pounds per Gallon	Kilograms per Liter	
3.0	.36	50
3.2	.38	53
3.4	.41	57
3.6	.43	60
3.8	.46	63
4.0	.48	66
4.2	.50	70

(e) Any person subject to an emission limitation set forth in Table 3A of this Section shall comply with the following schedule:

1. By January 1, 1981, a plan must be submitted to the Department for approval describing the measures which will be applied in order to achieve compliance. The plan submittal shall include:

i. completed applications for all required "Permits to Construct, Install, or Alter Control Apparatus or Equipment" and "Certificates to Operate Control Apparatus or Equipment"; and

ii. completed applications, if desired, for the mathematical combination of source gases as provided for in subsection 16.6(c)4 of this Subchapter; and

iii. documentation of the rates of application of surface coating formulations in surface coating operations excluded under the provisions of subsection (c) of this Section; and

iv. details of production rate changes or process modifications for which no "Permits to Construct, Install, or Alter Control Apparatus or Equipment" are required.

2. By January 1, 1981, and by the first day of every fourth month thereafter, persons using surface coating reformulation as a measure for complying with the provisions of subsection (a) of this Section shall submit detailed reports describing the progress being made with specific surface coating manufacturers and suppliers toward the development of suitable formulations.

3. By no later than 12 months prior to the applicable final compliance date set forth in Table 3A, construction or installation of equipment and control apparatus, in accordance with the approved plan, shall commence.

4. By the applicable final compliance date set forth in Table 3A, compliance with this Section shall be achieved.

(f) Any person subject to an emission limitation set forth in Table 3B of this Section shall comply with the following schedule:

1. By July 1, 1980, a plan must be submitted to the Department for approval describing the measures which will be applied in order to achieve compliance. The plan submittal shall include:

i. completed applications for all required "Permits to Construct, Install, or Alter Control Apparatus or Equipment" and "Certificates to Operate Control Apparatus or Equipment"; and

ii. completed applications, if desired, for the mathematical combination of source gases as provided for in subsection 16.6(c)4 of this Subchapter; and

iii. documentation of the rates of application of surface coating formulations in surface coating operations excluded under the provisions of subsection (c) of this Section; and

iv. details of production rate changes or process modifications for which no "Permits to Construct, Install, or Alter Control Apparatus or Equipment" are required.

2. By July 1, 1980, and by the first day of every fourth month thereafter, persons using surface coating reformulation as a measure for complying with the provisions of subsection (a) of this Section shall submit detailed reports describing the progress being made with specific surface coating manufacturers and suppliers toward the development of suitable formulations.

3. By July 1, 1981, construction or installation of equipment and control apparatus, in accordance with the approved plan, shall commence.

4. By January 1, 1982, compliance with this Section shall be achieved.

7:27-16.6 SOURCE OPERATIONS OTHER THAN STORAGE TANKS, TRANSFERS, OPEN TOP TANKS, SURFACE CLEANERS, AND SURFACE COATERS

(a) No person shall cause, suffer, allow or permit VOS to be emitted into the outdoor atmosphere from any source operation not subject to the provisions of Sections 16.2, 16.3, 16.4, 16.5, and 16.7 of this Subchapter, in excess of the maximum allowable emission rate as determined in accordance with the procedure for using Table 4.

Procedure for Using Table 4

Step 1: Determine the vapor pressure at standard conditions in pounds per square inch absolute of the VOS emitted from the source operation.

Step 2: Determine the percent by volume of the VOS in the source gas emitted from the source operation. Whenever dilution gas is added to the source gas from a source operation, the source gas shall be considered to have the gas discharge rate and composition prior to such dilution, in accordance with the following:

i. If the source operation discharges under a ventilation hood, concentration of VOS and the flow rate of the source gas may be measured or otherwise determined in the duct connecting the hood to the inlet of the ventilation fan.

ii. If the emissions and ventilation air are conveyed through ducts from the source operation to the outdoor atmosphere with no interruption, the concentration of VOS and the rate of the source gas are to be determined inside the ducts.

iii. For all other source operations including, but not limited to, evaporation from steps in chemical manufacturing processes, the concentration of VOS and the rate of the source gas shall be measured at a point no farther than 6 inches (15 centimeters) downstream from the point at which the vapors leave the process equipment.

Step 3: From Table 5, find the source gas range classification by selecting the appropriate line for the vapor pressure as determined in Step 1 and the appropriate column for the percent VOS as determined in Step 2.

Step 4: From Table 4, Column 2, determine the maximum allowable percent of process emissions for the source gas range as determined in Step 3.

Step 5: The maximum allowable emission rate shall be the pounds (kilograms) per hour (or per batch cycle hour) equivalent to the percent of the process emissions shown in Column 2 or the Exclusion Rate shown in Column 3, whichever is greater.

TABLE 4

MAXIMUM ALLOWABLE EMISSIONS FOR VOS FROM SOURCE OPERATIONS

Column 1	Column 2	Column 3	
Range Determined from Table 5	Maximum Allowable Emissions, Percent of Process Emissions by Weight	Exclusion Rates, Continuous or Batch Cycle Emission	
		Pounds per Hour	Kilograms per Hour
Range A	15	7	3.2
Range B	15	6	2.7
Range C	15	5	2.3
Range D	12	4	1.8
Range E	10	3	1.4
Range F	8	2	0.9
Range G	2	1	0.5
Range H	0.3	0	0
Range I	15	7	3.2

(b) The provisions of subsection (a) of this Section shall not apply to a source gas in Range A or B discharged into the outdoor atmosphere through a local exhaust ventilation system whose intake is located within 6 inches (15 centimeters) of the point at which the source gas is discharged to an internal work space, provided such exhaust ventilation system:

1. collects at least 60% by volume of a Range A source gas or 85% by volume of a Range B source gas emitted from the source operation; and

2. is equipped with a vapor control system which prevents from being discharged into the outdoor atmosphere at least 85% by volume of the VOS collected.

TABLE 5 - DETERMINANTS OF CONTROLS REQUIRED FOR PROCESS SOURCE GASES

VAPOR PRESSURE, A @ 70°F		CONCENTRATION OF ORGANIC SUBSTANCE BY VOLUME, PERCENT												
		Range A	Range B		Range C		Range D		Range E		Range F		G	H
Greater than	But not Greater Than	Not Greater Than	Greater Than	But not Greater Than	Greater Than	But not Greater Than	Greater Than	But not Greater Than	Greater Than	But not Greater Than	Greater Than	But not Greater Than		
0.0	0.1	0.1% (1000 PPM)	0.1% (1000 PPM)	1.0% (10,000 PPM)	1.0% (10,000 PPM)		-	-	1.0	18.0	18.0	97% Vapor	Greater Than 97% But Not Greater Than 99.5%	Greater Than 99.5%
0.1	0.2					-	1.0	7.0	7.0	29.0	29.0			
0.2	0.3					6.0	6.0	13.0	13.0	40.0	40.0			
0.3	0.4					9.0	9.0	18.0	18.0	45.0	45.0			
0.4	0.5					12.0	12.0	22.0	22.0	50.0	50.0			
0.5	0.6					14.0	14.0	25.0	25.0	56.0	56.0			
0.6	0.7					16.0	16.0	28.0	28.0	60.0	60.0			
0.7	0.8					18.0	18.0	31.0	31.0	64.0	64.0			
0.8	0.9					20.0	20.0	34.0	34.0	67.0	67.0			
0.9	1.0					22.0	22.0	37.0	37.0	70.0	70.0			
1.0	1.2					26.0	26.0	41.0	41.0	74.5	74.5			
1.2	1.4					29.0	29.0	45.0	45.0	77.5	77.5			
1.4	1.6					32.0	32.0	49.0	49.0	80.5	80.5			
6	1.8					34.5	34.5	52.0	52.0	83.0	83.0			
1.8	2.1					38.0	38.0	55.0	55.0	86.0	86.0			
2.1	2.4					41.5	41.5	58.0	58.0	88.0	88.0			
2.4	2.7					45.0	45.0	61.0	61.0	90.0	90.0			
2.7	3.0					48.0	48.0	64.0	64.0	91.5	91.5			
3.0	3.5					52.0	52.0	68.0	68.0	93.5	93.5			
3.5	4.0					55.0	55.0	71.0	71.0	95.5	95.5			
4.0	4.5					58.0	58.0	74.0	74.0	97.0				
4.5	5.0					61.0	61.0	76.0	76.0	97.0				
5.0	5.5					64.0	64.0	78.0	78.0	97.0				
5.5	6.0					66.5	66.5	79.5	79.5	97.0				
6.0	6.5					68.5	68.5	81.0	81.0	97.0				
6.5	7.0					70.5	70.5	82.5	82.5	97.0				
7.0	7.5					72.0	72.0	84.0	84.0	97.0				
7.5	8.0					73.5	73.5	85.0	85.0	97.0				
8.0	8.5					75.0	75.0	86.0	86.0	97.0				
8.5	9.5					77.5	77.5	87.5	87.5	97.0				
9.5	10.5					80.0	80.0	89.0	89.0	97.0				
10.5	11.5					82.0	82.0	90.5	90.5	97.0				
11.5	13.0					84.5	84.5	92.0	92.0	97.0				
13.0	14.7					87.0	87.0	93.0	93.0	97.0				
					Range I									
					Greater Than				But Not Greater Than					
14.7					1%				97%					

(c) For the purpose of this Section:

1. Source gases from a single source operation which are emitted from different vents in different range classifications as determined from Table 5 shall be considered as being discharged from separate source operations for each of which the maximum allowable emission rate must be determined separately.

2. Source operations normally falling within the category subject to the provisions of this Section but used for research or development purposes are exempt from compliance with subsection (a) of this Section provided they do not exceed the hourly exclusion rates for their ranges, as set forth in Table 4, Column 3; or provided:

- i. no more than 2 times the applicable hourly exclusion rate set forth in Table 4, Column 3 is emitted in any one hour; and
- ii. no more than 3 times the applicable hourly exclusion rate set forth in Table 4, Column 3 is emitted in any 24-hour period.

3. The maximum allowable emission rate for source gases physically combined (manifolded) from more than one source operation shall be the sum of the maximum allowable emission rates for the separate source gases as determined under subsections 16.5(a), 16.6(a) and 16.6(b) of this Chapter.

4. Disapproved.

5. Disapproved.

(d) After July 1, 1980, no person shall cause, suffer, allow or permit VOS to be emitted into the outdoor atmosphere from leaking flange gaskets, manhole gaskets, measuring instrument connections, sight glass connections, and other sealed connections, joints, and fittings not involving moving parts.

(e) After July 1, 1980, no person shall cause, suffer, allow or permit VOS to be emitted into the outdoor atmosphere from leaking valve bonnets, pump packings, compressor packings, and other seals surrounding moving parts:

1. If the rates of emissions result in concentrations of greater than 10,000 ppm by volume in the outdoor atmosphere when measured at a distance of 1 inch (2.54 centimeters) from the source.

2. If such emissions are in the liquid state.

(f) Any person subject to the provisions of subsections (a), (b), and (c) of this Section shall comply with the following schedule:

1. By July 1, 1980, a plan must be submitted to the Department for approval describing the measures which will be applied in order to achieve compliance. The plan submittal shall include:

- i. completed applications for all required "Permits to Construct, Install, or Alter Control Apparatus or Equipment" and "Certificates to Operate Control Apparatus or Equipment"; and
- ii. completed applications, if desired, for the mathematical combination of source gases as provided for in subsection (c) of this Section; and
- iii. documentation of process emission rates and batch cycle emission rates from source operations excluded under the provisions of subsection (a) of this Section; and

iv. details of production rate changes or process modifications for which no "Permits to Construct, Install, or Alter Control Apparatus or Equipment" are required.

2. By July 1, 1981, construction or installation of equipment and control apparatus, in accordance with the approved plan, shall commence.

3. By January 1, 1982, compliance with this Section shall be achieved.

7:27-16.7 CUTBACK AND EMULSIFIED ASPHALTS

(a) No person shall cause, suffer, allow or permit paving with cutback asphalt or emulsified asphalt containing VOS unless:

1. The paving is applied during the months of November, December, January, February, or March; or

2. The use is solely as a penetrating prime coat; or

3. The user can demonstrate that there are no emissions of VOS from the asphalt under conditions of normal use.

(b) The provisions of this Section shall become effective on April 1, 1981.

7:27-16.8 EMISSION INFORMATION AND TESTS

(a) Any person responsible for the emission of VOS shall, upon request of the Department, provide:

1. Information relating to the location, rate, duration, composition, and properties of the effluent and such other information as the Department may prescribe.

2. Facilities and necessary equipment for determining the quantity and identity of VOS emitted into the outdoor atmosphere and shall conduct such tests using methods approved by the Department. Test data shall be recorded in a permanent log at such time intervals as specified by the Department and shall be maintained for a period of not less than two years and shall be available for review by the Department.

3. Sampling facilities and testing facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the nature and quantity of VOS being emitted into the outdoor atmosphere. During such testing by the Department, the equipment and all components connected, or attached to, or serving the equipment shall be used and operated under normal routine operating conditions or under such other conditions as may be requested by the Department. The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-16.9 VARIANCES

(a) Whenever a person responsible for the emission of VOS believes that advances in the art of control for the kind and amount of VOS emitted have not developed to a degree which would enable the requirements of this Subchapter to be attained, he may apply to the Department in writing for a variance, setting forth his reasons and justifications therefor. The Department may issue a variance which shall be valid for a period not to exceed three years from the date of issuance and may be renewed upon application to the Department setting forth reasons and justifications for its continuation. Variances issued under the provisions of this Section shall be conditional on the compliance with any requirements which the Department deems to be necessary and may be revoked at any time at the discretion of the Department.

(b) Any person aggrieved by the denial or revocation by the Department of a variance authorized under the provisions of this Section may, upon application made within 15 days after notice of such denial or revocation, be entitled to a hearing before the Department upon at least 15 days written notice. Within 30 days after the close of such hearing the Department shall issue a notice amending, affirming or rescinding its previous action.

7:27-16.10 PERMIT TO CONSTRUCT AND CERTIFICATE TO OPERATE

(a) No person shall construct or install any new equipment, or any new control apparatus, or alter any existing equipment or control apparatus from which VOS are emitted into the outdoor atmosphere without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department, in accordance with the provisions of Subchapter 8 (Permits and Certificates) of this Chapter.

(b) No person shall use or cause to be used any new or altered equipment, or any new or altered control apparatus from which VOS are emitted into the outdoor atmosphere without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department, in accordance with the provisions of Subchapter 8 (Permits and Certificates) of this Chapter.

(c) No person shall use or cause to be used any equipment or control apparatus from which VOS are emitted into the outdoor atmosphere unless all components connected, or attached to, or serving the equipment, including control apparatus, are functioning properly and are in use in accordance with any relevant "Permit to Construct, Install or Alter Control Apparatus or Equipment" and any relevant "Certificate to Operate Control Apparatus or Equipment."

(d) Any "Permit to Construct, Install, or Alter Control Apparatus or Equipment" approved by the Department for control apparatus operated for purposes of compliance with this Subchapter may contain a provision for the temporary discontinuance of the operation of said control apparatus during the months of November, December, January, February, and March. Approval of such provisions shall be conditional upon factors including, but not limited to, the nature of the pollutant, the energy consumption of the control apparatus, and the potential for violating the provisions of Subchapter 5 of this Chapter.

7:27-16.11 APPLICABILITY

(a) Whenever persons, equipment, control apparatus or VOS subject to the provisions of this Subchapter are also subject to the provisions of any other Subchapters of this Chapter, the requirements of the relevant provisions of this Subchapter and all Subchapters of this Chapter will apply.

(b) Whenever a VOS subject to the emission rate provisions of this Subchapter is also subject to the emission rate provisions of any other Subchapters of this Chapter, the relevant provisions of the Subchapter requiring the lowest allowable rate will apply.

7:27-16.12 EXCEPTIONS

(a) The provisions of this Subchapter shall not apply to any stationary vessel or delivery vessel maintained under a pressure greater than one atmosphere provided that any vent serving such vessel has the sole function of relieving pressure under abnormal emergency conditions.

(b) The provisions of this Subchapter shall not apply to the emissions of VOS from the following source operations:

1. Glass manufacturing furnaces
2. Fiberglass manufacturing furnaces
3. Fuel burning for steam generation or space heating
4. Incinerators
5. Asphalt plant dryers
6. Open burning
7. Sulfuric acid plant burners

Subchapter 18 CONTROL AND PROHIBITION OF AIR POLLUTION FROM NEW OR ALTERED SOURCES AFFECTING AMBIENT AIR QUALITY IN NONATTAINMENT AREAS (EMISSION OFFSET RULE)

7:27-18.1 - DEFINITIONS

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Air quality simulation model" means a mathematical procedure for predicting the ambient air contaminant resulting from the dispersive properties of the atmosphere.

"Allowable emission" means the rate at which an air contaminant may be emitted into the outdoor atmosphere. For the purposes of this Subchapter, the allowable emissions shall be based on the maximum rated capacity of the equipment or on enforceable permit conditions which limit the operating rate, hours of operations, or both, and on the most stringent of the following:

1. Applicable new source performance standards as set forth in 40 CFR Part 60.
2. Applicable standards for hazardous pollutants as set forth in 40 CFR Part 61.
3. Applicable emission, equipment, and operating standards as set forth in this Chapter; and
4. The maximum emission rate specified as a condition of the last applicable permit in effect prior to an emission reduction approved by the Department for an emission offset or for banking.

"Alteration" means any change made to equipment or control apparatus or the use thereof, or in a process; including, but not limited to, any physical change, change in material being processes, or a change in the rate of production except where such a production rate change does not increase the quantity of air contaminants emitted or does not change the quality or nature of the air contaminant emitted.

"Attainment area" means any area determined by the Department as one in which the ambient air concentration for a criteria pollutant does not exceed a primary or secondary NAAQS.

"Banking" means reserving approved emission reductions for future use as emission offsets.

"Control apparatus" means any device which prevents or controls the emissions of any air contaminant.

"Criteria Pollutant" means ozone (O3), total suspended particulate matter (TSP), sulfur oxides measured as sulfur dioxide (SO2), nitrogen dioxide (NO2), volatile organic substances (VOS) measured as non-methane hydrocarbons, carbon monoxide (CO), or lead (Pb), or any other air contaminant for which national ambient air quality standards have been adopted.

"Department" means the Department of Environmental Protection.

"Emission offset" means a legally enforceable reduction, approved by the Department, in the rate of actual emissions from an existing facility to offset the increase in the allowble emissions of air contaminants from a new or altered facility.

"Employee commuter travel control measures" means methods used by an employer to reduce the amount of air contaminant emissions due to travel of his employees getting to and from the place of employment. Such methods may include, but are not limited to, ride sharing programs (car pooling or van pooling), preferential parking programs, employee incentives to use mass transportation, staggered work hours, and vehicle emission control programs.

"Employer business travel control measures" means methods used by an employer to reduce the amount of air contaminant emissions due to company related travel. Such methods may include, but are not limited to, ride sharing programs, optimization of delivery schedules, staggered work hours, vehicle emission control programs, alternative fuel and alternative propulsion systems.

"Equipment" means any device capable of causing the emission of an air contaminant into the open air and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment.

"Facility" means the combination of all structures, buildings, equipment, and other operations located on one or more contiguous or adjacent properties owned or operated by the same person.

"Fugitive emissions" means any emissions of an air contaminant into the open air other than through any stack, chimney, conduit, flue or other device.

"Lowest Achievable Emission Rate" (LAER) means that rate of emission from any equipment, facility, or control apparatus which incorporates advances in the art of air pollution control developed for the kind and amount of air contaminant emitted by the equipment or facility. For the purposes of this Subchapter, advances in the art of air pollution control shall result in an emission limitation at least as stringent as:

(1) The most stringent emission limitation which is contained in the implementation plan of any State for such class or category of equipment or facility, unless the owner or operator of the proposed equipment or facility demonstrates that such limitations are not achievable; or

(2) The most stringent emission limitation which is achieved in practice by such class or category of equipment or facility;

whichever is more stringent. In no event shall the application of this term permit proposed new or altered equipment or facilities to emit any pollutant in excess of the amount allowable under applicable federal new source standards of performance.

"Minimum offset ratio" means the minimum acceptable ratio of emission offsets from an existing facility to increases in allowable emissions from a new or altered facility.

"NAAQS" means national ambient air quality standard.

"Nonattainment area" means any area determined by the Department as one in which the ambient air concentrations of a criteria pollutant exceeds a national ambient air quality standard (NAAQS).

"Permit" means a "Permit to Construct, Install, or Alter Control Apparatus or Equipment" as required in accordance with the provisions of the Air Pollution Control Act (N.J.S.A. 26:2C-1 et seq.) and Subchapter 8 (Permits and Certificates) of this Chapter.

"Person" includes corporations, companies, associations, societies, firms, partnerships and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

"Reasonable further progress" means annual incremental reductions in emissions to the outdoor atmosphere of a criteria pollutant which are sufficient, in the judgement of the Department, to provide for attainment of the NAAQS as required by the Clean Air Act, as amended August, 1977 (42 U.S.C. 7401 et seq.).

"Resource recovery source" means any equipment used for processing solid waste (including refuse derived fuel and sewage sludge) for the purpose of extracting, converting to energy, or otherwise separating and preparing solid waste for reuse. For the purpose of this Subchapter energy conversion equipment must use solid waste to provide more than 50% of the heat input to be considered a resource recovery source.

"Secondary emissions" means emissions to the outdoor atmosphere which occur as a result of the construction or operation of a new or altered facility and which affect the same general area for the purposes of this Subchapter as emissions resulting from the new or altered equipment within the facility. Emissions resulting from motor vehicle or aircraft traffic generated by the new or altered facility are not secondary emissions for the purposes of this Subchapter. Secondary emissions include, but are not limited to:

(1) Emissions from marine vessels or from vehicles running upon rails or tracks where such vessels or vehicles are associated with the construction or operation of the facility; and

(2) Emissions from off-site support facilities which would be constructed or whose rate of emissions would otherwise increase as a result of the construction or operation of the primary facility.

"Significant emission increase" means an increase, since December 21, 1976, in the rate of allowable emissions, including fugitive pollutant emissions, at a facility of any criteria pollutant greater than or equal to 50 tons per year, 1,000 pounds per day, or 100 pounds per hour, not including decreases in the rates of allowable emissions except where such decreases are contemporaneous with emission increases. The increase in the rates of allowable emissions shall be the cumulative total of increases from all new or altered equipment for which permits have been issued on or after December 21, 1976 and for which permit applications have been received by the Department, and the fugitive emissions associated with that equipment. The hourly and daily rates shall apply only with respect to a pollutant for which a national ambient air quality standard for a period not exceeding 24 hours has been established.

7:27-18.2 GENERAL PROVISIONS

(a) No person shall cause, suffer, allow, or permit an emission increase in any area of the State which will cause a threshold increase in a nonattainment area, of a criteria pollutant, not including volatile organic substances, for which the area is nonattainment, as determined by the air quality impact review required by Section 18.3 of this Subchapter, unless compliance with subsection (c) of this Section is demonstrated.

(b) No person shall cause, suffer, allow or permit a significant emission increase in a nonattainment area, of a criteria pollutant for which that area is nonattainment, unless compliance with subsection (c) of this Section is demonstrated.

(c) Any person required by subsections (a) or (b) of this Section to comply with this subsection shall demonstrate that:

(1) Each new or altered equipment and facility is controlled to the degree which represents the lowest achievable emission rate (LAER) for the relevant criteria pollutant; and

(2) All existing facilities owned or operated by the person (or an entity controlling, controlled by, or under common control with the person) in New Jersey are in compliance with the provisions of this Chapter and with all applicable emission limitations and standards of the federal Clean Air Act as amended August, 1977, 42 U.S.C. 7401 et seq., or are in conformance with an enforceable compliance schedule approved by the Department; and

(3) Emission offsets in accordance with the provisions set forth in Section 18.4 (Emission Offset Demonstration) of this Subchapter are secured from existing facilities; and

(4) All employer business travel control measures and employee commuter travel control measures have been analyzed to assess the feasibility of their use at the subject facility. Analysis of ride-sharing shall include participation in the state ride-sharing program; and

(5) For a new or altered facility which would cause a significant emission increase in volatile organic substances, an analysis has been made of alternative sites, sizes, production processes and environmental control techniques for such facility demonstrating that the benefits of the proposed facility significantly outweigh the environmental and social costs imposed as a result of its location, construction or alteration.

(d) No person shall cause, suffer, allow or permit an emission increase which has been determined, in accordance with subsection 18.3(a) of this Subchapter, to cause a new violation of a NAAQS, unless emission offsets, in accordance with the provisions of Section 18.4 of this Subchapter (Emission Offset Demonstration), have been secured to eliminate such predicted violation.

(e) Once a facility is permitted to cause a significant emission increase in a nonattainment area for a criteria pollutant for which that area is nonattainment and has complied with the requirements of this Section:

(1) The requirements of subsections (c) 3, (c) 4, and (c) 5 of this Section shall again become applicable when proposed new construction or alterations at the facility would cause the increase in the rate of allowable emissions of that criteria pollutant to again exceed 50 tons per year, 1,000 pounds per day, or 100 pounds per hour whichever is most restrictive. The accumulation of increases in the rate of allowable emissions shall resume from zero after each application of subsections (c) 3 and (c) 4 of this Section.

(2) The requirements of subsections (c) 1 and (c) 2 of this Section shall be applicable to each subsequent construction or alteration which increases the rate of allowable emissions for the relevant criteria pollutant.

(f) Once a facility is permitted to offset a threshold increase in a nonattainment area, for a criteria pollutant for which that area is nonattainment, and has complied with the requirements of this Section:

(1) The requirements of subsections (c) 3, (c) 4, and (c) 5 of

shall:

(1) Consider all increases and contemporaneous decreases in the rate of allowable emissions since December 21, 1976 at the facility except for increases offset under the provisions of subsections 18.2 (c)3 and 18.2 (d) of this Subchapter; and

(2) Be required with each permit which causes the cumulative total of increases in the rates of allowable emissions of a criteria pollutant to exceed a multiple of 50 tons per year, 1,000 pounds per day, or 100 pounds per hour, not including increases offset under the provisions of subsections 18.2 (c)3 and 18.2 (d) of this Subchapter.

7:27-18.4 EMISSION OFFSET DEMONSTRATION

(a) Any person required to secure emission offsets in accordance with the requirements of this Subchapter must achieve such offsets on or before the commencement of operation of the new or altered facilty by:

(1) Installing air pollution control equipment which reduces the rate of the actual emissions to less than that of the allowable emissions; or

(2) Applying fugitive emission control measures which reduce the rate of the actual emissions to less than that of the allowable emissions; or

(3) Reducing production rate or operating hours to less than actual rates or hours for the year immediately preceding such reductions or for any representative year within 5 years of the reductions. For volatile organic substances (VOS), winter reductions of actual emissions may not be used to offset summer increases in allowable emissions; or

(4) Establishing and supporting employer business travel control measures or employee commuter travel control measures, provided that the reductions are quantifiable and enforceable and that they are not already required by the New Jersey State Implementation Plan for attaining and maintaining national ambient air quality standards.

(5) Adopting any other measures approved by the Department for reducing the rate of the actual emissions to less than that of the allowable emissions.

(b) Emission offsets required by this Subchapter must:

(1) Exceed the Minimum Offset Ratio and be within the respective distance specified in Table 2; and

(2) Be of like quality and nature to the emissions being offset;

this Section shall again become applicable if proposed new construction or alteration at the facility would again cause a threshold increase in a nonattainment area, for a criteria pollutant for which that area is nonattainment, as determined by the air quality impact review required by Section 18.3 of this Subchapter; and

(2) The requirements of subsections (c)1 and (c)2 of this Section shall be applicable to each subsequent construction or alteration which increases the rate of allowable emissions for the relevant criteria pollutant.

7:27-18.3 AIR QUALITY IMPACT REVIEW

(a) Any person who proposes to cause an increase since December 21, 1976 in the rate of allowable emissions at a facility, of any criteria pollutant, not including volatile organic substances (VOS), greater than or equal to 50 tons per year, 1,000 pounds per day, or 100 pounds per hour, not including decreases in the rates of allowable emissions except where such decreases are contemporaneous with emission increases; such increase in the rates of allowable emissions to be the cumulative total of increases from all new or altered equipment, for which permits have been issued on or after December 21, 1976 and for which permit applications have been received by the Department; must determine by use of an air quality simulation model approved by the Department whether the emission increase would cause:

(1) A threshold increase in ambient air concentration, as set forth in Table 1, to be exceeded in any nonattainment area for the criteria pollutant not including volatile organic substances, for which that area is nonattainment; and

(2) A new violation of a National Ambient Air Quality Standard (NAAQS).

TABLE 1

Threshold Increases in Ambient Air Concentrations For Nonattainment Areas

	Averaging Time				
Pollutant	Annual	24-Hour	8-Hour	3-Hour	1-Hour
SO2	1.0 ug/m**3	5 ug/m**3		25 ug/m**3	
TSP	1.0 ug/m**3	5 ug/m**3			
NO2	1.0 ug/m**3				
CO			0.5 ug/m**3		2 mg/m**3

(b) The determinations required by subsection (a) of this Section and

(3) Have an effective stack height no greater than that of the emissions being offset in the cases of sulfur dioxide and suspended particulates.

(4) Be provided in a manner that will not cause summer increases of allowable volatile organic substances (VOS) emissions to be offset by winter reductions of actual emissions.

TABLE 2

Distance of Offsets from Facility (miles)		Minimum Offset Ratio
VOS & NO2	SO2, TSP, CO	
0 - 100	0 - 0.5	1.00 : 1
100 - 250	0.5 - 1.0	1.5 : 1
250 - 500	1.0 - 2.0	2.0 : 1

(c) The Minimum Offset Ratios specified in Table 2 shall not apply if the Department determines that reasonable further progress toward attainment of the National Ambient Air Quality Standard (NAAQS) allows or requires that different minimum offset ratios be applied. Any person may petition the Department for the application of an emission offset different than those specified in Table 2 if it is shown by an air quality simulation model that a net air quality benefit would result from the proposed emission offset.

7:27-18.5 EMISSION OFFSET POSTPONEMENT

Any person responsible for a significant emission increase from a resource recovery source, equipment which must switch fuels because of fuel availability or equipment altered to comply with a state or federal regulation, directive, may apply to the Department for a postponement for complying with the provisions of subsection 18.2 (c)3 of this Subchapter provided the person demonstrates that emission ofsets are not immediately available. The Department may authorize such a postponement until such time as emission ofsets become available at which time the person must secure such offsets without delay.

7:27-18.6 EMISSION OFFSET EXEMPTION

The provisions of subsection 18.2 (c)3 of this Subchapter shall not apply to emissions from temporary facilities including, but not limited to, portable facilities which will be relocated outside of the nonattainment area within six months of commencement of operations and pilot plants which will cease production of an experimental product within six months of commencement of operation.

7:27-18.7 BANKING OF EMISSIONS

(a) The Department may credit a person with emission reductions achieved in accordance with the provisions of subsection 18.4(a) of this Subchapter. To obtain such credit, documentation of emission reductions achieved after the effective date of this Subchapter must be submitted to the Department within 6 months after the emission reduction occurs. Such emission reductions, if approved by the Department, shall become an enforceable operating restriction for the facility. Such banked emission reductions will be adjusted in accordance with the allowable emission rates in effect at the time when the banked emission reductions are offered to offset emissions from new or altered facilities.

(b) The provisions of subsection (a) of this Section shall not apply to emission reductions occurring:

(1) before August 7, 1977; or

(2) between August 7, 1977 and the effective date of this Subchapter unless documentation of the emission reductions is submitted to the Department within six months of the effective date of this Subchapter.

7:27-18.8 SECONDARY EMISSIONS

(a) Any person who, as a result of the construction of or alteration to a facility, is required to meet the provisions of Section 18.2 must certify that any sources of secondary emission increases which are:

(1) Under his control and which are associated with the facility, will meet all the provisions of Section 18.2 of this Subchapter as well; and

(2) Not under his control and which are associated with the facility, will meet the provisions of subsection 18.2 (c)3 of this Subchapter as well.

7:27-18.9 EXEMPTION FOR ALTERNATIVE FUEL

Where a person has demonstrated that the use of alternative fuels in existing fuel burning equipment will not cause a threshold increase, in a nonattainment area, of a criteria pollutant, for which that area is nonattainment for a primary National Ambient Air Quality Standard (NAAQS) and will not prevent reasonable further progress toward attaining any secondary NAAQS the Department may, in its discretion, exempt a person from compliance with the provisions of this Subchapter upon a further demonstration that:

(a) The equipment was capable of burning such fuel before December

21, 1976; or

(b) The equipment must use such fuel by reason of an order in effect under Section 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 792 et seq.) or under any superseding legislation, or by reason of a natural gas curtailment plan in effect pursuant to the Federal Power Act of 1978 (16 U.S.C. 791a et seq.); or

(c) The alternative fuel is derived from municipal solid waste; or

(d) The alternative fuel is to be used by reason of an order or rule issued under the provisions of Section 125 of the Clean Air Act as amended August, 1977 (42 U.S.C. 7425).

7:27-18.10 APPLICABILITY

(a) Whenever persons, facilities, equipment, control apparatus or air contaminants subject to the provisions of this Subchapter are also subject to the provisions of any other Subchapters of this Chapter, the requirements of the relevant provisions of this Subchapter and all Subchapters of this Chapter shall apply.

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION
NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27B

SUBCHAPTER 3

AIR TEST METHOD 3

SAMPLING AND ANALYTICAL PROCEDURES FOR THE DETERMINATION OF VOLATILE ORGANIC SUBSTANCES FROM SOURCE OPERATIONS

7:27B-3.1 Definitions

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise. Terms not defined in this section are intended to be used as defined in the New Jersey Air Pollution Control Act, N.J.S.A. 26:2C-1, et seq. and Chapter 27 in Title 7 of the New Jersey Administrative Code or are used in their common engineering or scientific sense.

"Calibration gas" means a gas of known composition.

"Combustion gas" means air which contains less than 2 ppm of methane or equivalent carbon and is used to support the combustion of Volatile Organic Substances in the sample gas.

"Cutback asphalt" means any paving asphalt which has been liquified by blending with petroleum solvents, or produced directly from the distillation of petroleum and having vaporization properties similar to the blended and liquified asphalt.

"Department" means the Department of Environmental Protection.

"Emulsified asphalt" means asphalt which has been liquified by mixing with water and an emulsifying agent.

"Fuel gas" means hydrogen or a mixture of hydrogen and an inert gas which contains less than 1 ppm of methane or equivalent carbon.

"Gasoline" means any petroleum distillate having a Reid vapor pressure of four pounds (207 millimeters of mercury) or greater and used as an automotive fuel.

"Manufacturer's certified gas mixture" means a mixture of more than one Volatile Organic Substance with a known concentration of each component and which is guaranteed by the supplier to have that composition.

"Performance Test" or "Test" means a series of test runs used for the purpose of determining emissions of air contaminants to the outdoor atmosphere.

"Petroleum distillate" means any mixture of VOS produced by condensing vapors of petroleum during distillation, including, but not limited to, naphthas, aviation gasoline, motor gasoline, kerosene, diesel oil, domestic fuel oil, and petroleum solvents.

"Run" or "Test Run" means a single integrated measurement or procedure used for the purpose of collecting a sample of air contaminants emitted to the outdoor atmosphere during a specified time interval.

"Sample collector" means any device used to selectively separate and collect a sample of a specified contaminant from a gas stream, including, but not limited to, thimbles, filters, impingers, bubblers, cyclones, condensers and adsorbers.

"Sampling location" means the specific position at which a sampling port is located in a stack or chimney.

"Sampling port" means an opening in a stack or chimney into which sampling or measuring devices may be inserted or through which a sample is extracted.

"Sampling rate" means the volume rate at which stack gases are drawn through a sampling train.

"Sampling train" means a combination of entrapment devices, instruments, and auxiliary apparatus arranged in a prescribed sequence to selectively separate and collect samples of specified air contaminants.

"Span gas" means the calibration gas corresponding to 80 percent of the full range of the instrument.

"Standard conditions" means 70°F (21.1°C) and one atmosphere pressure (14.7 psia or 760 mm Hg).

"Surface coating formulation" means the material including, but not limited to, paint, varnish, ink, and adhesive, applied to a solid surface in order to achieve a finished coating.

"Transfer operation" means the moving of any substance from any storage tank, manufacturing process vessel, or delivery vessel into any receiving vessel.

"Vapor" means the gaseous form of substances which, under standard conditions, are in the solid or liquid state and which can be changed to these states by either increasing the pressure or decreasing the temperature.

"Vapor pressure" means the pressure of the vapor phase of a substance, or the sum of the partial pressures of the vapor phases of individual substances in a mixture of substances, when in equilibrium with the non-vapor phase of the substance or substances.

"Volatile organic substances," herein abbreviated as VOS, means any organic substances, mixture of organic substances, or mixture of organic and inorganic substances including, but not limited to, petroleum crudes, petroleum fractions, petrochemicals, solvents, diluents, and thinners, excluding methane, which have vapor pressures or partial pressures of organic substances of 0.02 pounds per square inch (1 millimeter of mercury) absolute or greater measured at standard conditions; and, in the case of surface coating formulations, includes any coalescing or other agent, regardless of vapor pressure, which evaporates from the coating during the drying phase.

"Zero gas" means air or gas which contains less than 1 ppm of methane or carbon equivalent.

7:27B-3.2 Acceptable Test Methods

(a) Performance tests shall be conducted in accordance with test methods set forth hereinafter. Alternative test procedures, equipment and/or materials of construction may be used subject to prior approval and/or conditions prescribed by the Department. The Department may itself employ such alternatives when warranted by test conditions or other circumstances.

(b) For determining the quality and quantity of VOS from source operations, the prescribed test procedures shall be as follows:

1. For a single known VOS - Procedures for the Direct Measurement of VOS Using a Flame Ionization Detector (See Section 3.7 of this Subchapter).

2. For a mixture of known VOS in known proportions - Procedures for the Direct Measurement of VOS Using a Flame Ionization Detector (See Section 3.7 of this Subchapter).

3. For a mixture of known VOS in unknown proportions - Procedures for the Direct Measurement of VOS Using a Gas Chromatograph with a Flame Ionization Detector (See Section 3.8 of this Subchapter).

4. For a mixture containing unknown VOS - A procedure has not been included in these test methods, but an analysis using a gas chromatograph with a mass spectrometer will be required and conducted in accordance with established procedures by a qualified operator. Prior to any such tests, the Department must receive and approve a written procedure from the operator.

(c) Whenever a direct analysis at the source is not possible, the samples shall be taken in accordance with the procedures described in Section 3.9 of this Subchapter.

(d) Whenever a volume flow rate must be determined to establish mass emission rates of VOS or for any other reason, the methods prescribed in N.J.A.C. 7:27B-1, AIR TEST METHOD 1, shall be used.

7:27B-3.3 Operating Conditions During the Test

Insofar as practical, the source operation will be tested while operating at normal, routine conditions and, as necessary, at other conditions including, but not limited to, design, maximum and fluctuating rates.

7:27B-3.4 Sampling Facilities to be Provided by the Person Responsible for Emissions

(a) The owner or operator of the source operation to be tested shall be responsible for providing the following testing facilities upon request by the Bureau:

1. Sampling ports installed at locations specified by the Bureau and of a size large enough to accommodate the sampling equipment;

2. Safe sampling platforms and safe access thereto conforming with laws and regulations concerning safe construction and safe practice (Reference 1);

3. Utilities as needed for sampling and testing equipment. This may include electrical power and water;

4. Any other facilities exclusive of instrumentation and sensing devices as may be necessary for the Bureau to accurately determine the emissions of VOS from the source operation;

5. The facilities installed may be either permanent or temporary, at the discretion of the person responsible for their provision.

7:27B-3.5 Source Operations and Applicable Test Methods

(a) Storage of VOS

1. The vapor pressure of the VOS shall be determined in accordance with Section 3.6 of this Subchapter.

2. The efficiency of any control apparatus shall be determined by the simultaneous measurement of VOS before and after the control apparatus, using the applicable procedure prescribed in Sections 3.7, 3.8, or 3.9 of this Subchapter.

3. The determination of leaks from any source shall be made in accordance with Section 3.11 of this Subchapter.

(b) Transfer Operations

1. The vapor pressure of the VOS shall be determined, if necessary, in accordance with Section 3.6 of this Subchapter.

2. The procedures for determining leaks, the emissions of VOS, and the efficiency of any control apparatus, if necessary, shall be conducted in accordance with Section 3.11 of this Subchapter.

(c) Open Top Tanks and Surface Cleaners

1. The vapor pressure of the VOS shall be determined, if necessary, in accordance with Section 3.6 of this Subchapter.

2. The efficiency of any control apparatus shall be determined by the simultaneous measurement of VOS before and after the control apparatus, using the applicable procedure described in Sections 3.7, 3.8, or 3.9 of this Subchapter.

3. The concentration of VOS shall be determined using the applicable procedure described in Sections 3.7, 3.8, or 3.9 of this Subchapter.

(d) Surface Coating Operations

1. The determination of the VOS in surface coating formulations shall be conducted in accordance with Section 3.10 of this Subchapter.

2. The emissions of the VOS from surface coating operations shall be determined in accordance with the applicable procedure described in Sections 3.7, 3.8, or 3.9 of this Subchapter.

3. The efficiency of any control apparatus shall be determined, when necessary, by the simultaneous measurement of VOS before and after the control apparatus using the applicable procedure described in Sections 3.7, 3.8, or 3.9 of this Subchapter.

(e) Source Operations Other than Storage Tanks, Transfers, Open Top Tanks, Surface Cleaners, and Surface Coaters

1. The vapor pressure of the VOS shall be determined in accordance with Section 3.6 of this Subchapter.

2. The concentrations and emissions of the VOS shall be determined in accordance with the applicable procedure described in Sections 3.7, 3.8, or 3.9 of this Subchapter.

3. The efficiency of any control apparatus shall be determined by the simultaneous measurement of VOS before and after the control apparatus using the applicable procedure described in Sections 3.7, 3.8 or 3.9 of this Subchapter.

4. The determination of leaks from any source shall be made in accordance with Section 3.11 of this Subchapter.

7:27B-3.6 - PROCEDURES FOR THE DETERMINATION OF VAPOR PRESSURES OF VOLATILE ORGANIC SUBSTANCES

7:27B-3.6.1 Scope

(a) These procedures are applicable for the determination of vapor pressures of single known or mixtures of known and/or unknown VOS.

7:27B-3.6.2 Principle of Method

(a) The vapor pressure of a single known VOS and mixtures of VOS may be determined from certain established literature sources or, in the absence of such data, by prescribed standard methods established by the American Society for Testing and Materials (ASTM).

7:27B-3.6.3 Single Known Volatile Organic Substances

(a) The vapor pressure of certain single known VOS, found in the following or other approved sources, may be used provided the VOS is certified as being of or equivalent to research grade.

Weast, R. C., "Handbook of Chemistry and Physics,"
Section D, Chemical Rubber Co., Cleveland, Ohio

Perry, J. H., "Chemical Engineers' Handbook,"
Section 3, McGraw-Hill, New York

Lange, N. A., "Handbook of Chemistry,"
McGraw-Hill, New York

Boublik, T.; Gried, V.; and Hala, E.,
"The Vapor Pressure of Pure Substances,"
Elsevier Scientific Publishing, New York

Jordan, T. E., "Vapor Pressure of Organic Compounds"
Interscience Publishers, New York

(b) In the absence of referenced data, the vapor pressure of the single VOS may be determined by the following methods:

(1) ASTM Designation D323-72, "Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)." This method may be used only if the sensitivity of the pressure measuring device is sufficient for the vapor pressure level. The results must be converted and reported as the true vapor pressure at standard conditions.

(2) ASTM Designation D2879-76, "Standard Method of Test for Vapor Pressure - Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope."

7:27B-3.6.4 Mixtures of Known Volatile Organic Substances in Known Proportions

(a) Data on partial pressures for certain mixtures of VOS are published in the International Critical Tables and in scientific journals. The vapor pressure of a mixture which has been reported in such sources will be acceptable provided the source is documented by a reprint submitted to and approved by the Department.

(b) The vapor pressure may be determined by the following methods:

The method set forth in subsection 3.6.3(b)(1) of this Section. The Reid method is specific for volatile crude oil and volatile nonviscous petroleum products but is adaptable to other mixtures of VOS. For petroleum and petroleum distillates, refer to API (American Petroleum Institute) Bulletin 2517, "Selecting the Proper Nomograph." The Reid vapor pressure can be converted to true vapor pressure at standard conditions. For mixtures other than petroleum and petroleum distillates, the resulting Reid vapor pressure may be converted to true vapor pressure at standard conditions using Table 1 - "Conversion From Reid Vapor Pressures to True Vapor Pressures."

TABLE 1

CONVERSION OF REID VAPOR PRESSURES TO TRUE VAPOR PRESSURES

Reid Vapor Pressure Psia	True Vapor Pressure Psia
1	0.5
2	1.1
3	1.7
4	2.3
5	2.9
6	3.6
7	4.2
8	4.8
9	5.5
10	6.1
11	6.7
12	7.4
13	8.0
14	8.6
14.7	9.0

Notes:

1. Straight-line interpolation is to be used for intermediate values.
2. Applicable for volatile organic substance(s) other than petroleum and petroleum distillates.

7:27B-3.6.5 - Mixtures of Known and/or Unknown Volatile Organic Substance

(a) The vapor pressures of such mixture can be determined by the following applicable methods:

1. The method set forth in subsection 3.6.4(b)(1) of this Section.

2. ASTM Designation D2551-71, "Standard Method of Test for Vapor Pressure of Petroleum Products (Micromethod)."

3. The method set forth in subsection 3.6.3(b)2 of this Section.

7:27B-3.7 - PROCEDURES FOR THE DIRECT MEASUREMENT OF VOLATILE ORGANIC SUBSTANCES USING A FLAME IONIZATION DETECTOR (FID)

7:27B-3.7.1 Scope

(a) This method is applicable for the determination of the concentrations and the mass emission rates of known VOS or a mixture of known VOS in known proportions.

(b) For any circumstance other than that described in subsection (a) of this Section, test procedures must be approved by the Department.

(c) For the same circumstances as described in subsection (a) of this Section, any alternative test method must be approved by the Department.

7:27B-3.7.2 Principle of Method

This method is based upon flame ionization when the VOS in the sample is combusted in a hydrogen flame. The ions and electrons formed in the flame enter an electrode gap, decrease the gap resistance, and thus permit a current flow in an external circuit. The resulting current is proportional to the instantaneous concentration of the VOS.

7:27B-3.7.3 Summary of Method

(a) The detector is calibrated with standard gas mixtures, usually methane, to establish a calibration curve. A representative sample of the source gas is drawn through a heated sample line and, if necessary, a glass fiber filter into the calibrated FID. The response is recorded on a strip chart recorder or read, at specified intervals during the test period, as methane or equivalent carbon. From known source gas data and the relative FID response to the VOS, the recorded response is then adjusted to the true concentrations of the organic components on a volume basis.

The total gas flow rate and moisture content from the source operation is determined during the sampling period. The molecular weights of the VOS are established from the literature. The mass emission rate of VOS is calculated and reported as pounds per hour.

(b) For the purposes of this procedure, three separate one-hour test runs will be conducted. A test run may exceed one hour if so required by an applicable regulation or requirement.

7:27B-3.7.4 Equipment

(a) Probe - glass, stainless steel, or Teflon* tubing as required by source gas conditions and equipped with a filter, if necessary. The probe and filter must have a heating system capable of maintaining the temperature of the sample gas passing through them sufficiently high to prevent any condensation from occurring.

(b) Temperature sensor - a potentiometer with thermocouple or digital thermometer to measure source gas and probe temperatures.

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*Trademark

(c) Pump - a Teflon*-coated diaphragm-type pump or equivalent with a heating system capable of maintaining the temperature of the sample gas passing through it sufficiently high to prevent any condensation from occurring.

(d) Valves - Teflon* flow control valves or equivalent, capable of being maintained at a temperature sufficiently high to prevent any condensation of the sample gas from occurring.

(e) Analyzer - a flame ionization detector with a heating system capable of maintaining a temperature sufficiently high to prevent any condensation from occurring. The detector must be capable of meeting or exceeding manufacturer's specifications by demonstration, preferably by the manufacturer, and those specifications listed below:

1. Linearity - a maximum value of ± 5 percent of the full scale settings up to the maximum percent absolute calibration point.

2. Zero Drift - less than one percent of full scale per test period.

3. Span Drift - less than one percent of full scale per test period.

(f) Recorder/Integrator - a strip chart recorder to record the results and an integrator, if desired, to calculate the results.

(g) Gas Cylinders -

1. Calibration Gases - usually the standard gas mixtures will consist of methane (CH_4) in air but other VOS may be used if appropriate. Manufacturer's certified

gas mixtures in the concentration ranges of one less than, one greater than, and one approximately equal to the concentration of VOS in the source gas are used to prepare a calibration curve.

2. Span Gas - the calibration gas with the highest concentration is used to span the detector.

3. Zero Gas - the gas shall contain less than 1 ppm of equivalent carbon or methane.

4. Fuel Gas - hydrogen or a mixture of hydrogen and an inert gas with less than 1 ppm of equivalent carbon or methane.

5. Combustion Gas - air containing less than 2 ppm of equivalent carbon or methane. This is required only if the sample gas does not contain sufficient oxygen to support complete combustion.

(h) Velometer - an "S" type Pitot tube, or other appropriate velocity measuring device, with a manometer to measure the velocity head of the source gas.

(i) Condensor - a probe, two Greenburg-Smith impingers (one standard type containing 100 ml of distilled water and one modified type and dry, both immersed in an ice bath), a drying tube containing a suitable desiccant, a pump, and a gas meter with a thermometer, in series to condense and collect all of the moisture in a measured amount of source gas.

7:27B-3.7.5 Procedure

(a) Calibration

1. A presampling survey of the source operations must be conducted to establish certain basic information including, but not limited to, sampling location, stack temperature and pressure, stack gas moisture content, approximate particulate concentration, composition of the gases, and identification and approximate concentrations of the VOS to be analyzed. It may be necessary to take samples for analysis to acquire any information that is not readily available.

2. For specific operating instructions for the FID, refer to the manufacturer's manual.

3. Using the zero and span gases, adjust the zero and span settings on the analyzer. Repeat the introduction of the zero and span gases until no further adjustments are necessary.

4. Introduce the calibration gas and compare the actual reading with the predicted value.

5. The two values must be within ± 5 percent before conducting the source emission tests.

(b) Sampling and Analysis

1. Assemble and connect the sampling system to the FID, making sure that all connections are tight and leak-free.

2. Turn on the sampling and detector heater systems and adjust to a temperature which will prevent condensation from occurring.

3. Place the probe into the appropriate sampling position.

4. Activate the pump, note the time on the recorder chart, and adjust the flow and bleed valves to maintain the proper flow in the sample line.

5. During the test period, determine the stack gas velocity, temperature, moisture content, and volumetric flow rates in accordance with the methods prescribed in N.J.A.C. 7:27B-1, AIR TEST METHOD 1.

6. At the conclusion of each test run, note the time on the recorder chart and determine the zero and span drifts of the detector by introducing the proper gases. If the drifts are not within the limits specified in subsections 3.7.4 (e) 2 and 3 of this Section, the test will be considered invalid.

7:27B-3.7.6 Calculations

(a) Single known VOS

1. Calculate the total gas flow rate in SCFM (70° F & 1 atm).

2. Determine the average concentration (C) of the VOS in ppm (Cppm) in each test run from the calibration curve.

3. Establish the molecular weight of the VOS from literature (M.W. (VOS)).

4. Determine the Respone Factor (R.F.) of the VOS relative to methane from literature or experimentally. Express Relative Response Factor (R.R.F.) of VOS as

$$\text{R.R.F.} = \frac{\text{R.F. (VOS)}}{\text{R.F. (Methane)}}$$

5. Calculate the emission rate in lbs/hr. of the VOS

$$\frac{\text{lbs. VOS}}{\text{hr.}} = \frac{\text{Cppm (VOS)} \times \text{SCFM} \times \text{MW (VOS)} \times 60 \text{ min}}{387 \times 10^{6} \times \text{RRF} \qquad \text{hr.}}$$

Where:

Cppm (VOS) = parts per million of VOS determined from calibration curves

M.W. (VOS) = molecular weight of VOS

SCFM = cubic feet per minute at 70°F and 1 atm emitted by the source

387 = molar volume at standard conditions

(b) Mixture of known VOS in known proportions.

1. Calculate total gas flow rate in SCFM (70°F & 1 atm)

2. Determine the average total concentration (C) of the VOS in ppm (Cppm) in each test run from the calibration curve.

3. Determine the molecular weight of each VOS from literature (M.W. (VOS)).

4. Determine the Relative Response Factor for each VOS (R.R.F.) as in subsection 3.7.6 (a) 4 of this Section.

5. Calculate the emission rate in lbs/hr of the VOS.

$$\frac{\text{lbs. VOS}}{\text{hr.}} = \frac{\text{Cppm} \times \text{SCFM} \times \sum_{i=n}^{i=1} MW_1 \times I \times 60 \text{ min.}}{387 \times 10^6 \times \sum_{i=n}^{i=1} RRF_i \times I \times \text{hr}}$$

Where:

Cppm = flame ionization detector reading

$M.W._i$ = molecular weight of ith VOS.

SCFM = cubic feet per minute at 70°F and 1 atm emitted by the source

I = fraction of ith VOS in the mixture

RRF = relative response factor of ith VOS

387 = molar volume at standard conditions

Example: Assume VOS A, B, and C in mixture.

$$\frac{\text{lbs. VOS}}{\text{hr.}} = \frac{\text{Cppm} \times \text{SCFM} \, [(MW_A \times I_A) + (MW_B \times I_B) + (MW_C \times I_C)] \times 60 \text{ Min}}{387 \times 10^6 \, [(RRF_A \times I_A) + (RRF_B \times I_B) + (RRF_C \times I_C)] \quad \text{hr.}}$$

7:27B-3.8 - PROCEDURES FOR THE DIRECT MEASUREMENT OF VOLATILE ORGANIC SUBSTANCES USING A GAS CHROMATOGRAPH (GC) WITH A FLAME IONIZATION DETECTOR (FID)

7:27B-3.8.1 Scope

(a) This method is applicable for the determination of the concentrations and the mass emission rates of known VOS.

(b) For any circumstance other than that described in subsection (a) of this Section, test procedures must be approved by the Department.

(c) For the same circumstances as described in subsection (a) of this Section, any alternative test method must be approved by the Department.

7:27B-3.8.1 Principle of Method

This method is based upon (1) gas chromatography whereby VOS are separated by percolating a gas stream over a stationary phase and (2) flame ionization when each VOS in the sample as eluted from the gas chromatograph is combusted in a hydrogen flame. The ions and electrons formed in the flame enter an electrode gap, decrease the gap resistance, and thus permit a current flow in an external circuit. The resulting current is proportional to the instantaneous concentration of the VOS.

7:27B-3.8.3 Summary of Method

(a) The GC-FID is calibrated with standard gas mixtures, consisting of the VOS being measured, to establish the calibration curves and retention times. A representative sample of the source gas is drawn through a heated sample line and, if necessary, a glass fiber filter directly into the calibrated GC-FID. The responses and retention times of the individual VOS are recorded on a strip chart recorder and the VOS peak areas are measured. From the established retention times, the peaks are identified. The concentration of each VOS is determined by referring to the calibration curve. The total gas flow rate and moisture content from the source operation is determined during the sampling period. The molecular weights of the VOS are established from the literature. The mass emission rates of the VOS are calculated and reported as pounds per hour.

(b) For the purposes of this procedure, three separate one-hour test runs will be conducted. A test run may exceed one hour if so required by any applicable regulation or requirement.

(c) In situations where safety considerations prohibit direct analysis at the VOS source, the samples are collected in accordance with the method prescribed in Section 3.9 of this Subchapter and transported to the GC-FID for analysis.

7:27B-3.8.4 Equipment

(a) Probe - glass, stainless steel, or Teflon*, as required by source gas conditions and equipped with a filter, if necessary. The probe and filter must have a heating system capable of maintaining the temperature of the sample gas passing through them sufficiently high to prevent any condensation from occurring.

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*Trademark

(b) Temperature Sensor - a potentiometer with thermocouple or digital thermometer to measure source gas and probe temperatures.

(c) Gas Sampling Valve - a two-position heated valve to purge the sample loop or to direct the source gas into the gas chromatograph.

(d) Needle Valve - a fine adjustment valve to control the source gas sampling rate.

(e) Pump - a Teflon*-coated diaphragm pump or equivalent capable of delivering at least 1 liter/minute sampling rate and with a heating system capable of maintaining the temperature of the sample gas passing through it sufficiently high to prevent any condensation from occurring.

(f) Gas Chromatograph-Flame Ionization Detector (GC-FID) - a portable G.C. instrument equipped with a flame ionization detector and a suitable column to separate the VOS. The flame ionization detector must have a heating system capable of maintaining a temperature sufficiently high to prevent any condensation from occurring and must be capable of meeting or exceeding manufacturer's specifications by demonstration, preferably by the manufacturer, and those specifications listed below:

1. Linearity - the maximum ± 5 percent of the full scale settings up to the maximum percent absolute calibration point.

2. Zero Drift - less than one percent of full scale per test period.

3. Span Drift - less than one percent of full scale per test period.

(g) Recorder/Integrator - a strip chart recorder to record the results and an integrator, if desired, to calculate the results.

(h) Gas Cylinders

1. Calibration Gases - three manufacturer's certified gas mixtures composed of the VOS to be measured. The three standards in concentration ranges of one less than, one greater than, and one approximately equal to the concentration of VOS in the source gas are used to prepare a calibration curve.

2. Span Gas - the calibration gas with the highest concentration is used to span the detector.

3. Zero Gas - the gas shall contain less than 1 ppm of equivalent carbon or methane.

4. Fuel Gas - hydrogen or a mixture of hydrogen and an inert gas with less than 1 ppm of equivalent carbon or methane.

5. Combustion Gas - air containing less than 2 ppm of equivalent carbon or methane. This is required only if the sample gas does not contain sufficient oxygen to support complete combusion.

(i) Velometer - an "S" type Pitot tube, or other appropriate velocity measuring device, with a manometer to measure the velocity head of the source gas.

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*Trademark

(j) Condensor - a probe, two Greenburg-Smith impingers (one standard type containing 100 ml of distilled water and one modified type and dry, both immersed in an ice bath), a drying tube containing a suitable desiccant, a pump, and a gas meter with a thermometer, in series to condense and collect all of the moisture in a measured amount of source gas.

7:27B-3.8.5 Procedure

(a) Calibration

1. A presampling survey of the source operations must be conducted to establish certain basic information including, but not limited to, sampling location, stack temperature and pressure, stack gas moisture content, approximate particulate concentration, composition of the gases, and identification and approximate concentrations of the VOS to be analyzed. It may be necessary to take samples for analysis to acquire any information that is not readily available.

2. For specific operating instructions for the GC-FID, refer to the manufacturer's manual.

3. The operating parameters of the instrument, such as column selections, temperatures, carrier gas flow rate, and chart speed must be established for the VOS to be measured, and verified in the laboratory prior to actual sampling.

4. Flush the sample loop with carrier gas.

5. Activate the sampling valve and note the injection point on the chart.

6. Record any peaks or detector responses that occur in the absence of any sample.

7. The instrument operating conditions must be recorded on the chart and maintained throughout the calibration and sample gas analyses; i.e. sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator settings adjusted as required.

8. Flush the sample loop for at least 3 times the length of its residence time with one of the calibration gas mixtures and record the concentration.

9. Activate the sampling valve and mark the injection point on chart.

10. Measure the distance on the chart from the injection point to the time at which the peak maximum occurs for each compound. These distances divided by the chart speed will provide the retention times for each compound.

11. Calculate the sample peak areas and adjust each peak area by the attenuator setting as required.

12. Repeat steps 8 through 11 at least 3 times for the same calibration gas and average the corresponding peak areas for each compound. Each analysis should be within 5% of the average.

13. Repeat steps 8 through 11 for each of the other calibration gases. Each analysis should be within 5% of the average.

14. Plot the areas calculated in step 11 versus the concentrations on suitable graph paper.

15. When the points for each compound have been plotted, draw a smooth curve through the points thus establishing a calibration curve for each VOS. Calculate the unkown concentrations from peak areas by reading from the calibration curve or by multiplying the area by the slope of the calibration curve.

16. The instrument calibration must be checked at least twice daily with a standard gas.

(b) Sampling and Analysis

1. Assemble and connect the sampling system to the GC-FID, making sure that all connections are tight and leak-free.

2. Turn on the sampling and detector heater systems and adjust to a temperature which will prevent condensation from occurring.

3. Place the probe into the appropriate sampling position, activate the pump, and note the time.

4. After thoroughly flushing the system, analyze a sample of the source gas maintaining the same instrument operating conditions used during the calibration procedure. Calculate concentrations of components by referring to the calibration curve.

5. Repeat the analysis on as many samples as practical during the one-hour test run. No less than three sample analyses per test run will be acceptable.

6. Unless specified by the Department, each performance test must consist of not less than three separate and valid one-hour test runs.

7. During the test period, determine the stack gas velocity, temperature, moisture content, and volumetric flow rates in accordance with the methods prescribed in N.J.A.C. 7:27B-1, AIR TEST METHOD 1.

8. At the conclusion of each test run, note the time on the recorder chart and determine the zero and span drifts of the detector by introducing the proper gases. If the drifts are not within the limits specified in subsections 3.8.4(f)2 and 3 of this Section, the test will be considered invalid.

7:27B-3.8.6 Calculations

(a) Calculate the total gas flow rate in SCFM (70°F and 1 atm).

(b) Determine the average concentration (C) of each VOS in ppm (Cppm) in each test run from the calibration curves.

(c) Establish the molecular weight of each VOS from literature (MW (VOS)).

(d) Calculate the emission rate in lbs/hr of each VOS.

$$\frac{\text{lbs VOS}}{\text{hr}} = \frac{\text{Cppm(VOS)} \times \text{SCFM} \times \text{M.W.(VOS)} \times 60\ \text{min.}}{387 \times 10^6 \qquad \text{hr.}}$$

Where:

Cppm(VOS) = parts per million of VOS determined from calibration curves

M.W.(VOS) = molecular weight of VOS

SCFM = cubic feet per minute at 70°F and 1 atm emitted by the source

387 = molar volume at standard conditions

(e) Calculate total emission rate in lbs/hr. of the VOS by summing the individual VOS calculated in subsection (d) of this Section.

7:27B-3.9 - PROCEDURES FOR THE SAMPLING AND REMOTE ANALYSIS OF KNOWN VOLATILE ORGANIC SUBSTANCES USING A GAS CHROMATOGRAPH (GC) WITH A FLAME IONIZATION DETECTOR (FID)

7:27B-3.9.1 Scope

(a) This method is applicable for the collection of samples from a source where it is not possible to conduct a direct analysis at the source and for the determination of the concentrations and the mass emission rates of known VOS.

(b) For any circumstance other than that described in subsection (a) of this Section, test procedures must be approved by the Department.

(c) For the same circumstances as described in subsection (a) of this Section, any alternative test method must be approved by the Department.

7:27B-3.9.2 Principle of Method

(a) This method is based upon (1) removal of the moisture and condensable VOS with a condensation train, (2) collecting the resulting dry sample gas in a Tedlar* bag, (3) gas chromatography whereby VOS are separated by percolating a gas stream over a stationary phase, and (4) flame ionization when each VOS in the sample as eluted from the gas chromatograph is combusted in a hydrogen flame. The ions and electrons formed in the flame enter an electrode gap, decrease the gap resistance, and thus permit a current flow in an external circuit. The resulting current is proportional to the instantaneous concentration of the VOS.

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*Trademark

7:27B-3.9.3 Summary of Method

(a) A representative sample from the source is drawn through a heated sample line to a series of condensors in an ice bath where the moisture and condensable VOS are removed. The dry sample gas is collected in a Tedlar* bag which, along with the collected condensate, is transported to the GC-FID for analysis.

(b) The GC-FID is calibrated with standard gas mixtures, consisting of the VOS being measured, to establish the calibration curves and retention times. Representative portions of the condensate and bag sample are injected separately into the calibrated GC-FID. The responses and retention times of the individual VOS are recorded on a strip chart recorder and the VOS peak areas are measured. From the established retention times, the peaks are identified. The concentration of each VOS is determined by referring to the calibration curve. The total gas flow rate and moisture content from the source operation is determined during the sampling period. The molecular weights of the VOS are established from the literature. The mass emission rates of the VOS are calculated and reported as pounds per hour.

(c) For the purposes of this procedure, three separate one-hour test runs will be conducted. A test run may exceed one hour if so required by any applicable regulation or requirement.

7:27B-3.9.4 Equipment

(a) Probe - glass, stainless steel, or Teflon* as required by source gas conditions and equipped with a filter, if necessary. The probe and filter must have a heating system capable of maintaining the temperature of the sample gas passing through them sufficiently high to prevent any condensation from occurring.

(b) Temperature Sensor - a potentiometer with thermocouple or digital thermomter to measure source gas and probe temperatures.

(c) Gas Sampling Valve - a two-position heated valve to purge the sample loop or to direct the source gas into the gas chromatraph.

(d) Needle Valve - a fine adjustment valve to control the source gas sampling rate.

(e) Pump - a Teflon*-coated diaphragm pump or equivalent capable of delivering at least 1 liter/minute sampling rate and with a heating system capable of maintaining the temperature of the sample gas passing through it sufficiently high to prevent any condensatio from occurring.

(f) Condensation trap - three micro-impingers (two with 10 ml water and one dry) in an ice bath.

(g) Gas Meter - a dry gas meter to measure the volume of the gas sample collected.

(h) Sample Bag - a Tedlar* bag with at least 60 liter capacity equipped with a hose connection and shut-off valve to collect and store sample.

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*Trademark

(i) Gas Chromatograph-Flame Ionization Detector (GC-FID) - a G.C. instrument equipped with a flame ionization detector and a suitable column to separate the VOS. The detector must have a heating system capable of maintaining the temperatue of the sample gas passing through it sufficienly high to prevent any condensate from occurring and must be capable of meeting or exceeding manufacturer's specifications by demonstration, preferably by the manufacturer, and those specifications listed below:

1. Linearity - a maximum value of ± 5 percent of the full scale settings up to the maximum percent absolute calibration point.

2. Zero Drift - less than one percent of full scale per test period.

3. Span Drift - less than one percent of full scale per test period.

(j) Recorder/Integrator - a strip chart recorder to record the results and an integrator, if desired, to calculate the results.

(k) Gas Cylinders

1. Calibration Gases - three manufacturer's certified gas mixtures composed of the VOS to be measured. The three standards in concentration ranges of one less than, one greater than, and one approximately equal to the concentration of VOS in the source gas are used to prepare a calibration curve.

2. Span Gas - the calibration gas with the highest concentration is used to span the detector.

3. Zero Gas - the gas shall contain less than 1 ppm of equivalent carbon or methane.

4. Fuel Gas - hydrogen or a mixture of hydrogen and an inert gas with less than 1 ppm of equivalent carbon or methane.

5. Combustion Gas - Air containing less than 2 ppm of equivalent carbon or methane. This is required only if the sample gas does not contain sufficient oxygen to support complete combustion.

(l) Velometer - an "S" type Pitot tube, or other appropriate velocity measuring device, with a manometer to measure the velocity head of the source gas.

(m) Condensor - a probe, two Greenburg-Smith impingers (one standard type containing 100 ml of distilled water and one modified type and dry, both immersed in an ice bath), a drying tube containing a suitable desiccant, a pump, and a gas meter with a thermometer, in series to condense and collect all of the moisture in a measured amount of source gas.

7:27B-3.9.5 Procedure

(a) Sampling

1. A presampling survey of the source operation must be conducted to establish certain basic information including but not limited to, sampling location, stack temperature and pressure, stack gas moisture content, approximate particulate concentration, composition of the gases, and identification and approximate concentrations of the VOS to be analyzed. It may be necessary to take samples for analysis to acquire any information that is not readily available.

2. Connect the probe to a temperature sensor, condensor, pump, gas meter, and sample bag, in series, and conduct a leak-check to make sure that all connections are tight and leak-free.

3. Turn on the probe heater system and adjust to a temperature which will prevent condensation from occurring.

4. Place the probe into the appropriate sampling position and activate the pump after recording the time and gas meter reading.

5. Collect at least 25-30 liters of sample gas during the one-hour test period.

6. Record the temperature of the sample gas at the gas meter during the test period.

7. Record the volume of gas sampled and measure the volume of condensate collected. Save the condensate and bag sample for analysis.

8. Unless specified by the Department, each performance test must consist of not less than three separate and valid one-hour test runs.

9. During the test period, determine the stack gas velocity, temperature, moisture content and volumetric flow rates in accordance with the methods prescribed in N.J.A.C. 7:27B-1, AIR TEST METHOD 1.

(b) Calibration

1. For specific operating instruction for the GC-FID, refer to the manufacturer's manual.

2. The operating parameters of the instrument, such as column selections, temperatures, carrier gas flow rate, and chart speed must be established for the VOS to be measured, and verified in the laboratory prior to the actual analysis.

3. Flush the sample loop with carrier gas.

4. Activate the sampling valve and note the injection point on the chart.

5. Record any peaks or detector responses that occur in the absence of any sample.

6. The instrument operating conditions must be recorded on the chart and maintained throughout the calibration and sample gas analyses; i.e. sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator settings adjusted as required.

7. Flush the sample loop for at least 3 times the length of its residence time with one of the calibration gas mixtures and record the concentrations.

8. Activate the sampling valve and mark the injection point on chart.

9. Measure the distance on the chart from the injection point to the time at which the peak maximum occurs for each compound. These distances divided by the chart speed will provide the retention times for each compound.

10. Calculate the sample peak areas and adjust each peak area by the attentuator setting as required.

11. Repeat steps 7 through 10 at least 3 times for the same calibration gas and average the corresponding peak areas for each compound. Each analysis should be within 5% of the average.

12. Repeat steps 7 through 10 for the other calibration gases. Each analysis should be within 5% of the average.

13. Plot the areas calculated in step 10 versus the concentrations on suitable graph paper.

14. When the points for each compound have been plotted, draw a smooth curve through the points thus establishing a calibration curve for each VOS. Calculate the unkown concentrations from peak areas by reading from the calibration curve or by multipyling the area by the slope of the calibration curve.

15. The instrument calibration must be checked at least twice daily with a standard gas.

(c) Analysis

1. Turn on the detector heater system and adjust to a temperature which will prevent any condensate from occurring.

2. After thoroughly flushing the system, analyze an aliquot of the bag sample maintaining the same instrument operating conditions used during the calibration procedures. Calculate the concentrations of the components by referring to the calibration curves.

3. Perform the analysis of the bag sample at least three times and average the corresponding peak areas for each compound. Each analysis should be within 5% of the average.

4. Using a micro-liter syringe inject an aliquot of the condensate or the extract of the condensate after using an appropriate solvent, into the GC-FID for analysis. Determine the area of each VOS peak.

5. Perform the analysis of the condensate at least three times and average the corresponding peak areas for each compound. Each analysis should be within 5% of the average.

(d) Calculations

1. Calculate the total gas flow rate in SCFM (70°F and 1 atm).

2. Bag Sample - Using the calibration curves developed in subsection 3.9.5(b) of this Section and the area of each VOS, determine the concentration (C) of each VOS in ppm (Cppm VOS).

3. Condensate - Convert the calibration curves used in subsection 3.9.5(b) of this Section from ppm vs area to microgram (ugm) vs area. Then from the VOS peak areas and the calibration curves determine the concentration (C) of each VOS in the condensate in ppm (Cppm VOS) in the vapor phase.

$$\text{Cppm(VOS)} = \frac{(\text{Area})(\text{slope}) \times 10^6 \times V_c \times 22.1}{V_j \times \text{M.W.(VOS)} \times 10^6 \times V_g}$$

Where:

Area = area of VOS peak (area units)

Slope = slope of calibration curve (ugm/area unit)

Vc = condensate volume (liters)

Vj = injection volume (liters)

Vg = volume of gas sampled (liters)

M.W. (VOS) = molecular weight of VOS (gms)

22.1 = molar volume at standard conditions (liters)

4. Determine the total concentration (C) of each VOS in the source gas in ppm (Cppm) by summing the results from subsections (d) 2 and 3 of this Section.

5. Establish the molecular weight of each VOS from literature (M.W.(VOS)).

6. Calculate the emission rate in lbs/hr of each VOS.

$$\frac{\text{lbs VOS}}{\text{hr.}} = \frac{\text{Cppm(VOS)} \times \text{SCFM} \times \text{M.W.(VOS)}}{387 \times 10^6} \times \frac{60\ \text{min.}}{\text{hr.}}$$

Where:

Cppm(VOS) = sum of bag sample and condensate concentrations in parts per million of each VOS.

M.W.(VOS) = molecular weight of VOS.

SCFM = cubic feet per minute at 70°F and 1 atm. emitted by the source.

387 = molar volume at standard conditions.

7. Calculate the total emission rate of VOS in lbs/hr. by summing the emission rates of each individual VOS as calculated in subsection (d) 6 of this Section.

7:27B-3.10 - PROCEDURES FOR THE DETERMINATION OF VOLATILE ORGANIC SUBSTANCES IN SURFACE COATING FORMULATIONS

7:27B-3.10.1 Scope

(a) This method is applicable for the determination of the VOS contained in formulations used in surface coating operations.

(b) For the same circumstances as described in subsection (a) of this Section, any alternative test method must be approved by the Department.

7:27B-3.10.2 Principle of Method

(a) This method is based upon the determination of the amount of VOS and water, if present, in a surface coating formulation and the density of the surface coating formulation.

7:27B-3.10.3 Procedure

(a) VOS content of surface coating formulations.

1. Completely fill a container, with a representative sample of the surface coating formulation to be analyzed. Seal the container so that the volatiles present will not escape.

(b) Each coating material is classified as follows:

1. Class I - General solvent type paints (oil base) and coatings not clearly belonging to Class II or III.

2. Class II - Varnishes and lacquers including clear and pigmented varnishes and lacquers.

3. Class III - Water thinned coatings including emulsions, latex paints, and colored enamels.

(c) Determine the density of the formulation using the procedure specified in ASTM Designation D 1475-60, "Standard Method of Test for Density of Paint, Varnish, Lacquer, and Related Products".

(d) Class I Surface Coatings

1. Determine the content of the VOS by using the procedure specified in ASTM Designation D 2369-73, "Standard Method of Test for Volatile Content of Paints".

2. Calculate the VOS content in $\frac{kg}{l}$

$$C_{VOS}\ \frac{kg}{l} = \frac{(W_1 - W_2)\ (Dm) \times kg \times 1000\ ml}{S \times 1000\ gm \times l}$$

Where:

W_1 = weight of dish + sample (gm)

W_2 = weight of dish + sample after heating (gm)

Dm = density of coating (gm/ml)

S = sample weight (gm)

(e) Class II Surface Coatings

1. Determine the content of the VOS using the procedure specified in ASTM Designation D 1644-59, "Standard Methods of Test for Nonvolatile Content of Varnishes - Method A".

2. Calculate the VOS content in $\frac{kg}{l}$

$$C_{VOS}\ \frac{kg}{l} = \frac{(W_1 - W_2)\ (Dm)\ x\ kg\ x\ 1000\ ml}{S\ x\ 1000\ gm\ x\ l}$$

(f) Class III Surface Coatings

1. Determine the water content of the formulation using the procedure specified in Federal Standard 141a Method 4082.1, "Water in Paint and Varnishes (Karl Fischer Titration Method)".

2. Determine the content of the VOS by using the procedure specified in ASTM Designation D 2369-73, "Standard Method of Test for Volatile Content of Paints".

3. Calculate the VOS content in $\frac{kg}{l}$

$$C_{VOS}\ \frac{kg}{l} = \frac{(W_1 - W_2 - .01PS)\ Dm\ x\ kg\ x\ 1000\ ml}{S\ x\ 1000\ gm\ x\ l}$$

Where:

W_1 = weight of dish + sample (gm)

W_2 = weight of dish + sample after heating (gm)

P = % water

Dm = density of coating (gm/ml)

S = sample weight (gm)

(g) Convert VOS content from kg/l to lb/gal

$$C_{VOS}\ \frac{lb}{gal} = C_{VOS}\ \frac{kg}{l}\ x\ 8.345$$

7:27B-3.11 - PROCEDURES FOR THE DETERMINATION OF VOLATILE ORGANIC SUBSTANCES EMITTED FROM TRANSFER OPERATIONS

7:27B-3.11.1 Scope

(a) This procedures is applicable for the determination of the concentrations and the mass emission rates of known VOS from the transfer or loading of gasoline.

(b) For any circumstance other than that described in subsection (a) of this Section, test procedures must be approved by the Department.

(c) For the same circumstances as described in subsection (a) of this Section, any alternative test method must be approved by the Department.

7:27B-3.11.2 Principle of Method

This method is based upon (1) gas chromatography whereby VOS are separated by percolating a gas stream over a stationary phase and (2) flame ionization when each VOS in the sample as eluted from the gas chromatograph is combusted in a hydrogen flame. The ions and electrons formed in the flame enter an electrode gap, decrease the gap resistance, and thus permit a current flow in an external circuit. The resulting current is proportional to the instantaneous concentration of the VOS.

7:27B-3.11.3 Summary of Method

(a) The GC-FID is calibrated with standard gas mixtures, consisting of the VOS being measured, to establish the calibration curves and retention times. A representative sample of the source gas is drawn through a heated sample line and, if necessary, a glass fiber filter directly into the calibrated GC-FID. The responses and retention times of the indvidual VOS are recorded on a strip chart recorder and the VOS peak areas are measured. From the established retention times, the peaks are identified. The concentration of each VOS is determined by referring to the calibration curve. The total gas flow rate and moisture content from the source operation is determined during the sampling period. The molecular weights of the VOS are established from the literature. The mass emission rates of the VOS are calculated and reported as pounds per 10,000 gallons of gasoline transferred.

(b) For the purposes of this procedure, three separate test runs will be conducted. Each test run shall be conducted over a period of time during which at least 10,000 gallons of gasoline are transferred but in no case shall the test period be less than one hour in duration.

(c) During each test run, all flanges, valves, connections and fittings shall be tested for leaks using a FID or a combustible gas detector.

7:27B-3.11.4 Equipment

(a) Probe - glass, stainless steel, or Teflon*, as required by source gas conditions and equipped with a filter, if necessary. The probe and filter must have a heating system capable of maintaining the temperature of the sample gas passing through them sufficiently high to prevent any condensation from occurring.

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*Trademark

(b) Temperature Sensor - a potentiometer with thermocouple or digital thermometer to measure source gas and probe temperatures.

(c) Gas Sampling Valve - a two-position heated valve to purge the sample loop or to direct the source gas into the gas chromatograph.

(d) Needle Valve - a fine adjustment valve to control the source gas sampling rate.

(e) Pump - a Teflon* -coated diaphragm pump or equivalent capable of delivering at least 1 liter/minute sampling rate and with a heating system capable of maintaining the temperature of the sample gas passing through it sufficiently high to prevent any condensation from occurring.

(f) Leak Detector - a portable FID or a combustible gas detector capable of measuring a concentration of at least 10,000 ppm of VOS.

(g) Gas Chromatograph-Flame Ionization Detector (GC-FID) - a portable G.C. instrument equipped with a flame ionization detector and a suitable column to separate the VOS. The flame ionization detector must have a heating system capable of maintaining the temperature of the sample gas passing through it sufficiently high to prevent any condensation from occurring and must be capable of meeting or exceeding manufacturer's specifications by demonstration, preferably by the manufacturer, and those specifications listed below:

1. Linearity - the maximum ± 5 percent of the full scale settings up to the maximum percent absolute calibration point.

2. Zero Drift - less than one percent of full scale per test period.

3. Span Drift - less than one percent of full scale per test period.

(h) Recorder/Integrator - a strip chart recorder to record the results and an integrator, if desired, to calculate the results.

(i) Gas Cylinders

1. Calibration Gases - three manufacturer's certified gas mixtures composed of the VOS to be measured and one composed of propane. The three standards in concentration ranges of one less than, one greater than, and one approximately equal to the concentration of VOS in the source gas are used to prepare a calibration curve. The propane standard shall have a concentration of approximately 10,000 ppm.

2. Span Gas - excluding the propane standard, the calibration gas with the highest concentration is used to span the detector.

3. Zero Gas - the gas shall contain less than 1 ppm of equivalent carbon or methane.

4. Fuel Gas - hydrogen or a mixture of hydrogen and an inert gas with less than 1 ppm of equivalent carbon or methane.

5. Combustion Gas - air containing less than 2 ppm of equivalent carbon or methane. This is required only if the sample gas does not contain sufficient oxygen to support complete combustion.

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*Trademark

(j) Velometer - an "S" type Pitot tube, or other appropriate velocity measuring device, with a manometer to measure the velocity head of the source gas.

(k) Condensor - a probe, two Greenburg-Smith impingers (one standard type containing 100 ml of distilled water and one modified type and dry, both immersed in an ice bath), a drying tube containing a suitable desiccant, a pump, and a gas meter with a thermometer, in series to condense and collect all of the moisture in a measured amount of source gas.

7:27B-3.11.5 Procedure

(a) Calibration

1. A presampling survey of the source operation(s) must be conducted to establish certain basic information including, but not limited to, sampling location, stack temperature and pressure, stack gas moisture content, approximate particulate concentration, composition of the gases, and identification and approximate concentrations of the VOS to be analyzed. It may be necessary to take samples for analysis to acquire any information that is not readily available.

2. For specific operating instruction for the GC-FID, refer to the manufacturer's manual.

3. The operating parameters of the instrument such as column selections, temperatures, carrier gas flow rate, and chart speed must be established for the VOS to be measured, and verified in the laboratory prior to actual sampling.

4. Flush the sample loop with carrier gas.

5. Activate the sampling valve and note the injection point on the chart.

6. Record any peaks or detector responses that occur in the absence of any sample.

7. The instrument operating conditions must be recorded on the chart and maintained throughout the calibration and sample gas analyses; i.e. sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator settings adjusted as required.

8. Flush the sample loop for at least 3 times the length of its residence time with one of the calibration gas mixtures and record the concentration.

9. Activate the sampling valve and mark the injection point on chart.

10. Measure the distance on the chart from the injection point to the time at which the peak maximum occurs for each compound. These distances divided by the chart speed will provide the retention times for each compound.

11. Calculate the sample peak areas and adjust each peak area by the attenuator setting as required.

12. Repeat steps 8 through 11 at least 3 times for the same calibration gas and average the corresponding peak areas for each compound. Each analysis should be within 5% of the average.

13. Repeat steps 8 through 11 for each of the other calibration gases except the propane. Each analysis should be within 5% of the range.

14. Plot the areas calculated in step 11 versus the concentrations on suitable graph paper.

15. When the points for each compound have been plotted, draw a smooth curve through the points thus establishing a calibration curve for each VOS. Calculate the unknown concentrations from peak areas by reading from the calibration curve or by multiplying the area by the slope of the calibration curve.

16. The instrument calibration must be checked at least twice daily with a standard gas.

17. The FID or combustible gas detector must be calibrated with the standard propane gas.

(b) Sampling and Analysis

1. Assemble and connect the sampling system to the GC-FID, making sure that all connections are tight and leak-free.

2. Turn on the sampling and detector heater systems and adjust to a temperature which will prevent condensation from occurring.

3. Place the probe into the appropriate sampling position, activate the pump and note the time.

4. After thoroughly flushing the system, analyze a sample of the source gas maintaining the same instrument operating conditions used during the calibration procedure. Calculate concentrations of components by referring to the calibration curve.

5. Repeat the analysis on as many samples as practical during the test run. No less than three sample analyses per test run will be acceptable.

6. Unless specified by the Department, each performance test must consist of not less than three separate and valid test runs during each of which at least 10,000 gallons of gasoline are transferred and each of which are not less than one hour in duration.

7. During the test period, a simultaneous test must be conducted on the gas displaced from the receiving vessel upstream of any vapor control system.

8. During the test period, all flanges, valves, connections and fittings must be checked for leaks with the FID or combustible gas detector, taking measurements one inch from the potential leak source. A leak showing a reading of 10,000 ppm or greater at one inch from the source is unacceptable and will void the test run.

9. During the test period, determine the source gas velocity, temperature, moisture content, and volumetric flow rates in accordance with the methods prescribed in N.J.A.C. 7:27B-1 - AIR TEST METHOD 1.

10. Record the total gallons of gasoline transferred during the test period.

11. At the conclusion of each test run, note the time on the recorder chart nd determine the zero and span drifts of the detector by introducing the proper gases. f the drifts are not within the limits specified in subsections 3.11.4 (g) 2 and 3 of this Section, the test will be considered invalid.

7:27B-3.11.6 Calculations

(a) Calculate the total gas flow in SCFM(70°F and 1 Atm).

(b) Determine the average concentration (C) in the the outlet from and, if necessary, the inlet to the vapor control system for each VOS in ppm (Cppm) in each test run from the calibration curves.

(c) Establish the molecular weight of each VOS from literature(MW(VOS)).

(d) Calculate the emission rate in lbs/hr or lbs/test run of each VOS in the outlet from the vapor control system.

$$\frac{\text{lbs VOS}}{\text{hr}} = \frac{\text{Cppm(VOS)} \times \text{SCFM} \times \text{M.W.(VOS)} \times 60\ \text{min.}}{387 \times 10^{6} \qquad\qquad \text{hr}}$$

or

$$\frac{\text{lbs VOS}}{\text{test run}} = \frac{\text{Cppm(VOS)} \times \text{SCFM} \times \text{M.W.(VOS)} \times t\ \text{min}}{387 \times 10^{6}}$$

Where:

Cppm (VOS) = parts per million of VOS determined from calibration curves

M.W. (VOS) = molecular weight of VOS

SCFM = cubic feet per minute at 70°F and 1 atm emitted by the source

387 = molar volume at standard conditions.

t = length of test in minutes

(e) Calculate total emission rate in lbs/hr or lbs/test run of the VOS by summing the individual VOS calculated in subsection (d) of this Section.

(f) Determine the total gallons of gasoline transferred in gal/hr or gal/test run.

(g) Calculate total emission rate of the VOS in lbs per 10,000 gallons of gasoline transferred.

$$\frac{\text{lbs VOS}}{10{,}000\ \text{gal}} = \frac{\text{lbs VOS} \times 10{,}000}{\text{gal of gasoline transferred}}$$

(h) Determine the total concentration (C) of the VOS in the inlet to the vapor control system in ppm (Cppm) by summing the individual concentrations of the VOS determined in subsection (b) of this Section.

(i) Convert the total concentration (C) of the VOS in ppm (Cppm) to the total concentration (C) of the VOS in volume percent (C% VOS).

$$C\%\ VOS = \frac{Cppm\ (VOS) \times 100}{10^6} = Cppm \times 10^4$$

7:27B-3.12 - PROCEDURES FOR THE DETERMINATION OF VOLATILE ORGANIC SUBSTANCES IN CUTBACK AND EMULSIFIED ASPHALTS

7:27B-3.12.1 Scope

(a) These methods are applicable for the determination of VOS in cutback or emulsified asphalts.

(b) For any circumstance other than that described in subsection (a) of this Section, test procedures must be approved by the Department.

(c) For the same circumstances as described in subsection (a) of this Section, any alternative test methods must be approved by the Department.

7:27B-3.12.2 Principle of Method

These methods are based upon the separation by distillation of the more volatile organic constituents from cutback and emulsified asphalts and a determination of the vapor pressure of the resulting distillate.

7:27B-3.12.3 Summary of Method

(a) A representative sample of the cutback asphalt is subjected to distillation at a controlled rate to a temperature of 680°F and the weight and volume of the resulting distillate are determined.

(b) A representative sample of the emulsified asphalt is subjected to distillation at controlled temperatures and the weight and volume of the resulting distillate, excluding water, are determined.

(c) The vapor pressure of the distillate is determined.

7:27B-3.12.4 Procedure

(a) Cutback asphalts

1. Obtain a representative sample of the cutback asphalt.

2. Analyze a weighed portion, to the nearest 0.1g, of the sample in accordance with ASTM Designation D402-76, "Standard Test Method for Distillation of Cut-Back Asphaltic (Bituminous) Products".

3. Weigh the distillate to the nearest 0.1g and calculate the percent by weight of distillate in the cutback asphalt.

4. Determine the vapor pressure of the distillate in accordance with the procedures set forth in Section 3.6 of this Subchapter.

(b) Emulsified asphalts

1. Obtain a representative sample of the emulsified asphalt.

2. Analyze a weighed portion, the nearest 0.1g, of the sample in accordance with ASTM Designation D244-77, "Standard Methods of Testing Emulsified Asphalts".

3. Weigh the distillate to the nearest 0.1g and calculate the percent by weight of distillate in the emulsified asphalt.

4. Determine the vapor pressure of the distillate in accordance with the procedures set forth in Section 3.6 of this Subchapter

References

(1) Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926, are available from the Occupational Safety and Health Administration, U.S. Department of Labor, 1515 Broadway, New York, N.Y. 10036. (Free).